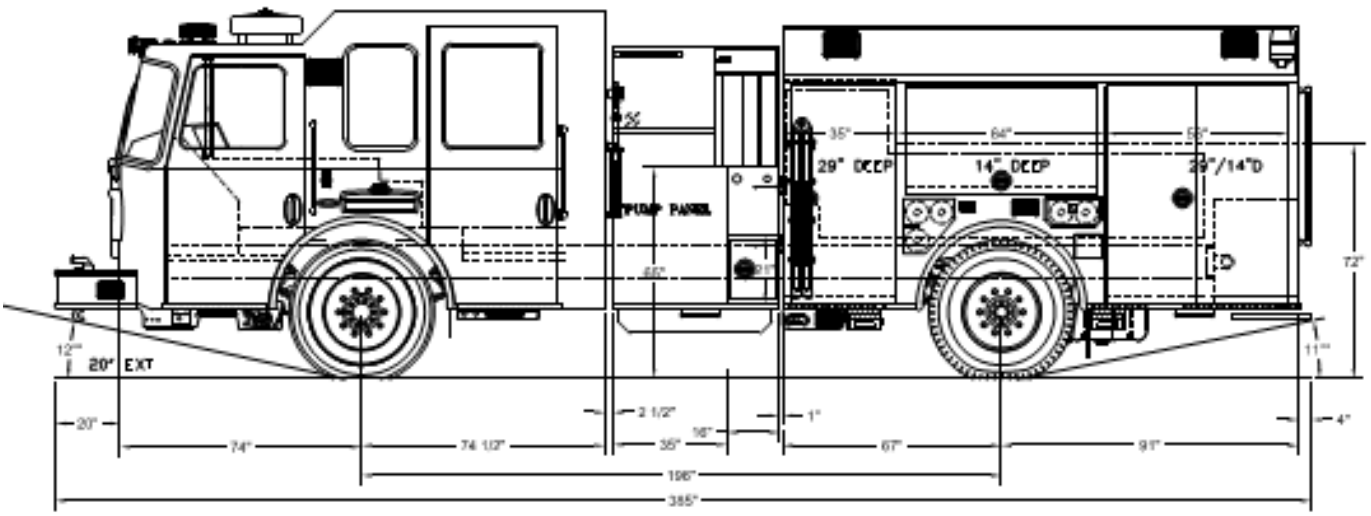
SPECIFICATIONS
FOR

CENTRAL PIERCE
FIRE AND RESCUE



1500 GPM/500 GALLON TYPE I ENGINE

BID SHEET

Re: Type 1 Pumper

We hereby propose to furnish to you, One (1) to Five (5), current production model year, Type I Pumper Apparatus in accordance with your specifications, in which all exceptions or equals have been listed for the following prices:

Basic Bid F.O.B.
Central Pierce Fire & Rescue
17520 22nd Ave. East
Tacoma, Washington. 98445 $_____

Washington State Sales Tax $_____

Drive-Out Allowance: (In base bid) $_____

Inspection Trip Allowance: (In base bid) $_____

Product Liability Insurance Amount $_____

_____
Surety Company

_____
Policy Number

_____
Agents Name

_____
Agents Phone

Bid Bond in the amount of: $ _____

_____
Completed Vehicle Manufactured by:

_____
Model Quoted:

Washington State Vehicle Dealer License # _____
(Attach copy of Dealer License)

Authorized Service Center _____

Years as a franchised dealer: _____

_____ Date:_____
Bidder / Dealer

_____
(Printed name & title of officer signing)

_____
Company

_____
Street Address

_____
City, State and Zip Code

_____
Business Phone

We, the Completed Vehicle Manufacturer, agree to provide the District, With a One Hundred Percent- (100%) Performance Bond, within ten- (10), working days of acceptance, of this bid proposal by the District.

_____. Date: _____
(Must be signed by an officer of the Manufacturer)

_____
(Printed name & title of officer signing)

_____
Manufacturer

_____
Street Address

_____
City, State and Zip Code

_____
Business Phone

ANTI-COLLUSION STATEMENT

By signing this bid, the bidder agrees that his bid is made without any understanding, agreement, or connection with any other person, firm, or corporation making a bid for the same purpose and that his bid is in all respects fair and without collusion or fraud.

Company Name: _____

Bidder Signature: _____

Date Signed: _____

OPTIONS / ALTERNATES

A-1.) MULTIPLE YEAR, MULTIPLE VEHICLE PRICING:

Provide a Five (5) year pricing option for one (1) to five (5) Type 1 Pumping Apparatus. Include the Price Escalator percentage that will be locked in and nonadjustable during the term of this contract. The District reserves the right to Increase or Decrease number of units purchased.

Exception: Yes: _____No: _____

Escalator percentage_____

Pricing 1st year_____

Pricing 2nd year_____

Pricing 3rd year _____

Pricing 4th year_____

Pricing 5th year _____

A-2) PAYMENT DISCOUNTS:

The contractor shall provide for a payment discount schedule, which would be available solely at the Districts discretion. This discount schedule shall be offered for payment of the vehicle(s) at the following stages of construction:

- a) Chassis completion
- b) Body completion
- c) Balance upon factory pickup and drive out
- d) Multiple Year / Unit Purchases Exception Yes: _____ No:_____

Bidder's page No. _____
a) Discount Amount(s): _____
b) Discount Amount(s): _____
c) Discount Amount(s): _____
d) Discount Amount(s): _____

GENERAL INFORMATION

The proposed apparatus will be constructed to withstand the severe and continuous use encountered during emergency firefighting services. The apparatus will be of the latest type, carefully designed and constructed with due consideration to the nature and distribution of the load to be sustained.

This proposal details the general design criteria of cab and chassis components, aerial device (if applicable), fire pump and related components (if applicable), water tank (if applicable), fire body, electrical components, painting, and equipment.

All items of these proposal specifications will conform to the National Fire Protection Association Pamphlet No. 1901, latest edition.

Manufacture shall furnish satisfactory evidence of our ability to construct, supply service parts and technical assistance for the apparatus specified.

INTENT OF SPECIFICATIONS

It shall be the intent of these specifications to cover the furnishing and delivery of a complete apparatus equipped as hereinafter specified. These specifications cover only the general requirements as to the type of construction and test to which the apparatus shall conform, together with certain details as to finish, equipment and appliances with which the successful bidder shall conform. Minor details of construction and materials, which are not otherwise specified, are left to the discretion of the contractor, who shall be solely responsible for the design and construction of all features. Apparatus proposed by the bidder shall meet the applicable requirements of the National Fire Protection Association (NFPA) as stated in current edition at time of contract execution. Loose equipment shall be provided only as stated in the following pages.

Bids shall only be considered from companies that have an established reputation in the field of fire apparatus construction and have been in business for a minimum of 20 years. Further, bidder shall maintain dedicated service facilities for the repair and service of products. Evidence of such a facility shall be included in bidder proposal.

Each bidder shall furnish satisfactory evidence of their ability to construct the apparatus specified and shall state the location of the factory where the apparatus is to be built. The bidder shall also show that the company is in position to render prompt service and to furnish replacement parts for said apparatus.

Each bid shall be accompanied by a set of "Contractor's Specifications" consisting of a detailed description of the apparatus and equipment proposed and to which the apparatus furnished under contract shall conform. These specifications shall indicate size, type, model and make of all component parts and equipment.

QUALITY AND WORKMANSHIP

The design of the apparatus shall embody the latest approved automotive engineering practices. The workmanship shall be of the highest quality in its respective field. Special consideration shall be given to the following points: Accessibility of the various units which require periodic maintenance, ease of operation (including both pumping and driving) and symmetrical proportions. Construction shall be rugged and ample safety factors shall be provided to carry the loads specified and to meet both on and off road requirements and speed conditions as set forth under "Performance Tests and Requirements". Welding shall not be employed in the assembly of the apparatus in a manner that shall prevent the ready removal of any

component part for service or repair. All steel welding shall follow American Welding Society D1.1-96 recommendations for structural steel welding. All aluminum welding shall be done to American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum. Flux core arc welding shall use alloy rods, type 7000, American Welding Society standards A5.20-E70T1. The manufacturer is required to have an American Welding Society certified welding inspector in plant during working hours to monitor weld quality.

INSTRUCTION TO BIDDER'S
FOR
One- (1) or More Type 1 Pumper Apparatus

Sealed bid proposals will be received by "Central Pierce Fire & Rescue", hereafter referred to as the "District", on or before 3:00 p.m. PST July 31st, 2014, at 17520 22nd Ave. East, Tacoma, WA. 98445, for the furnishing of one-(1) new, current production year, Type I Pumping Apparatus. Bids will be opened and read aloud.

This is a public bid and may be utilized by any other public agency within the authority granted in Chapter 39.34, laws of the State of Washington, and subject to acceptance by the bidder.

All bid proposals shall be deemed to be offers to enter into a contract and will be irrevocable for a period of at least forty five- (45) days, from the date of the opening of the bids.

These specifications shall become a part of the final contract. Bidder(s) shall fill in the bid sheet completely, giving accurate information, If any bidder has any exceptions to these specifications, such exceptions shall be stated in writing, and bidder shall describe in detail what is proposed to be furnished in lieu of the specified requirements. Exceptions must be referenced to the corresponding paragraph in these specifications.

In addition, a detailed set of manufacture's specifications and drawings of the unit proposed shall be included with the bid.

The District reserves the right to reject any and all bids, to waive any irregularities in any bids or in the bidding procedure, and to accept any bid presented which meets or exceeds these specifications and which the Board of Commissioners deems in the best interest of the District

A bid security, in the form of a "BID BOND"**,** payable to the District in the amount of ten percent (10%) of the total bid amount must be provided with the bid proposal. The "PRINCIPAL" named on the "BID BOND", shall be the "BIDDER" (i.e. Dealer). Cashier checks and other forms of deposit are not acceptable.

A one hundred percent- (100%) "PERFORMANCE BOND" will be required. The performance bond shall be from an incorporated surety company licensed to transact business in the state of Washington and shall be provided within ten- (10) working days following award of the bid.

The "Bid Sheet" provided with these specifications, shall be used by all Bidder's submitting proposals. The bid must be signed by an officer of the Manufacturer whose equipment is being bid in the space provided on the Bid Sheet.

The sealed envelope containing the bid must be clearly marked **"Type 1 Pumper Apparatus Bid".** Bid opening date of **July 31st, 2014, at 3:00 p.m. PST** 17520 22nd Ave. East Tacoma, WA. 98445.
The Successful Bidder will be notified within thirty (30) business days from time of the Bid Opening. The Successful Bidder will be notified no later than September 11th 2014 by 3:00 p.m. PST.

PRE-AWARD CLARIFICATION'S:

In the event a clarification is requested on the contents of these specifications the question shall be addressed in writing to the Logistics Assistant Chief of the District(s):

"Brian Caldier, Asst. Chief"
Central Pierce Fire & Rescue
17520 22nd Avenue East
Tacoma, Washington 98445
Wk (253)-538-6400
Fax (253)-537-7294
bcaldier@centralpiercefire.org

Clarifications, or corrections, to these specifications shall not be valid unless they are in written form and signed by the Purchaser(s).

When a Bidder requests a clarification, a copy of the request and the Purchaser(s) reply will be forwarded to all Bidder's.

Drawings of current units will be available upon request.

MANUFACTURER:
The "First Stage" manufacturer is the original equipment manufacturer (O.E.M.), which built the specified chassis and its components. The "Second Stage" manufacturer is the company who will produce the modifications to the O.E.M. chassis and deliver the final product to this agency.

Bid Evaluation.
Bids received shall be evaluated by the District. This evaluation will be based as a minimum on the following criteria:

1. Completeness of the proposal, i.e. the degree to which it responds to all requirements and requests for information contained herein.
2. Manufacturing and delivery schedule.
3. Contractor's demonstrated capabilities and qualifications.
4. Contractor's past performance on similar bid proposals.
5. Contractor's design and engineering reliability factors.
6. Contractor's maintainability considerations and recommendations.
7. Bidder's logistical and service support. The nearest service location for the chassis as well as the complete vehicle shall be clearly stated within the bid proposal submitted.

Bid Proposals taking total exception to these specifications will not be accepted.

Note: In performing the evaluation, only information contained within the bidder's written proposal will be considered. ***IF IT IS NOT IN THE PROPOSAL SUBMITTED WITHIN THE TIMELINES, IT WILL NOT BE ACCEPTED LATER.***

CONTRACT AWARD.
The District reserves the right to increase or decrease the number of vehicles or equipment specified under this contract. If awarded, the bidder agrees that additional public governmental agencies may purchase under the same terms and prices afforded by any contract arising from the bid award. The District reserves the right to waive any informalities, irregularities, and technicalities in procedure.

The District reserves the right before awarding this contract, to require a bidder to submit evidence of the "Second Stage" vehicle manufacturer's qualifications as it may deem necessary, and may consider any

evidence available to it of the financial, technical, and other qualifications and abilities of said manufacturer, including past performance on contracts of this type with other agencies. The District shall be the final authority in the award of this bid.

MATERIALS AND WORKMANSHIP:

All equipment furnished shall be guaranteed to be new and of current manufacture, meet all requirements of this specification, and be in an operable condition at the time of delivery.

All parts shall be of high quality workmanship, shall be in production at the time of bid, and no part of the attachment shall be substituted or applied contrary to the manufacturer's recommendation's and standard practices.

All workmanship shall be of quality and performed in a professional manner so as to insure a safe and functional apparatus with an aesthetic appearance.

PROPRIETARY PARTS

It is the intention of the Purchaser for the successful bidder to furnish the apparatus with all major parts commonly used by the heavy-duty truck manufacturers and open market vendors.

It is required that replacement parts be readily available and at reduced cost.

The use of proprietary parts such as but not limited to axles, suspensions, engines, transmissions, frontal air bags, electronic controls, multiplexing systems, seats, pumps, gauges, HVAC Systems, foam systems, lighting etc., are not desired by Central Pierce Fire and Rescue and not be acceptable by the purchaser.

FIRE APPARATUS DOCUMENTATION

Manufacture shall supply, at the time of delivery, at least one (1) copy of the following documents:

The manufacturer's record of apparatus construction details, including the following information:

- Owners name and address
- Apparatus manufacturer, model and serial number
- Chassis make, model and serial number
- Front tire size and total rated capacity in pounds
- Rear tire size and total rated capacity in pounds
- Chassis weight distribution in pounds with water and manufacturer mounted equipment, front and rear
- Engine make, model, serial number, rated horsepower, rated speed and governed speed
- Type of fuels and fuel tank capacity
- Electrical system voltage and alternator output in amps.
- Battery make, model and total capacity in cold crank amps (CCA)
- Transmission make, model and serial number. If so equipped chassis transmission PTO(s) make, model and gear ratio
- Pump make, model, rated capacity in gallons per minute (liters per minute where applicable) and serial number
- Pump transmission make, model, serial number and gear ratio

- Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable) and serial number
- Water tank certified capacity in gallons or liters
- Paint manufacturer and paint number(s)
- As Built HVAC System Diagram to include wiring diagram, component list to include model and part numbers.
- Steer Axle make, model and serial number
- Drive axle make, model and serial number to include gear ratio

Certification of slip resistance of all stepping, standing and walking surfaces.

If the apparatus has a fire pump or an industrial supply pump, the pump manufacturer's certification of suction capability.

If the apparatus has a fire pump or an industrial supply pump, a copy of the apparatus manufacturer's approval for stationary pumping applications.

If the apparatus has a fire pump or an industrial supply pump, the engine manufacturers certified brake horsepower curve for the engine furnished, showing the maximum governed speed.

If the apparatus has a fire pump or an industrial supply pump, the pump manufacturer’s certification of hydrostatic test.

If the apparatus has a fire pump or an industrial supply pump, the Underwriters Laboratory certification of inspection and test for the fire pump.

If the apparatus has an aerial device the Underwriters Laboratory certification of inspection and test for the aerial device.

If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1911, Standards for Testing Fire Department Aerial Devices.

If the apparatus has a fixed line voltage power source, the certification of the test for the fixed power source.

If the apparatus is equipped with an air system, test results of the air quality, the SCBA fill station, and the air system installation.

Weight documents from certified scale - showing actual loading on the front axle, rear axle(s) and overall vehicle (with the water tank full but without personnel, equipment and hose) will be supplied with the complete vehicle to determine compliance with NFPA-1901

Written load analysis and results of electrical performance tests.

If the apparatus is equipped with a water tank, the certification of water tank capacity by the tank manufacturer.

The proposed chassis will be certified by the manufacture as conforming to all applicable Federal Motor Vehicle Safety Standards (FMVSS) in effect at the date of contract. This will be attested to by the attachment

of a FMVSS certify caution label on the vehicle by the manufacture, who will be recognized as the responsible final manufacturer.

Manufacture shall be responsible for preparing and maintaining a record file of parts and assemblies used to manufacture the proposed apparatus. These records will be maintained the manufacturer's factory for a minimum of twenty (20) years. The file will contain copies of any and all reported deficiencies, all replacement parts required to maintain the apparatus, and original purchase documents including specifications, contract, invoices, incomplete chassis certificates, quality control reports and final delivery acceptance documents. The purchaser will have access to any and all documents contained in this file upon official written request.

"TOP OF THE LINE" CHASSIS

Successful Bidder is proposing a custom built chassis, which is "Top Of The Line" including the cab structure and design, Multiplex electrical system, drive train and frame assembly.

GENERAL CONSTRUCTION

The proposed apparatus, assemblies, subassemblies, component parts, etc., will be designed and constructed with the due consideration to the nature and distribution of the load to be sustained and to the general character of the service to which the apparatus is subjected to when placed in service. All parts of the apparatus will be designed with a factor of safety, which is equal to or greater than that which is considered standard and acceptable for this class of equipment in firefighting service. All parts of the proposed apparatus will be strong enough to withstand general service under full load. The apparatus will be so designed that the various parts and readily accessible for lubrication, inspection, adjustment and repair.

The apparatus will be designed and constructed, and the equipment so mounted, with due consideration to distribution of the load between front and rear axles that all specified equipment, including a full complement of specified ground ladders, full water tank, loose equipment, and firefighters will be carried without overloading or injuring the apparatus.

SINGLE-LINE RESPONSIBILITY

Successful Bidder is to be a true "sole source" manufacturer. Successful Bidder engineers, designs, manufactures, builds and paints our own fire apparatus cab, chassis, body, aerial devices and electrical systems. All work is done in Successful Bidders owned and operated manufacturing facilities by Successful Bidders direct employees. This capability provides consistent design and manufacturing procedures that will reduce warranty issues and provide ease in parts replacement.

PRODUCT LIABILITY INSURANCE

Successful Bidder shall provide liability and facility insurance equaling $30,000,000.00, which is one of the highest available in the fire industry. Reference attached documentation.

PAINT PERFORMANCE CERTIFICATION

The proposed apparatus shall meet or exceed the required Commercial Vehicle Paint Performance Standards.

PRICES AND PAYMENTS

The bid price will be F.O.B. Destination, on a delivered and accepted basis at the Fire Department.
Total price on successful bidder's proposal sheet will include all items listed in these specifications.

Manufacture shall compute pricing less federal and state taxes. It is understood that any applicable taxes will be added to the proposed prices, unless the purchaser furnishes appropriate tax-exempt forms.

DELIVERY TIME

Successful bidder shall complete the apparatus and set delivery time based on the number of calendar days, starting from the date the sales contract is signed and accepted by the successful Bidder of this Fire Apparatus.

Delivery Time:_____ Calendar Days

DELIVERY

Apparatus, to insure proper break in of all components while still under warranty, **shall be delivered under its own powe**r. A qualified delivery engineer representing the contractor shall deliver the apparatus and remain for a sufficient length of time to instruct personnel in the proper operation, care and maintenance of the equipment delivered. The department may choose and has the option of providing delivery of vehicle utilizing one of the department's personnel.

SERVICE APPARATUS

The apparatus shall be serviced prior to acceptance by the purchaser. This service shall be done at the service and repair facility of the sales representative(s) or at a location approved by the purchaser. This service shall include changing all filters and fluids, road testing the apparatus and cleaning and detailing the interior and exterior.

BOND REQUIREMENTS

An original bid bond will be submitted with the successful bidder's proposal. The bond will be for an amount equal to 10% of the proposed bid price.

Successful bidders bonding company will meet the following requirements:

An acceptable surety as outlined by the United States Department of Treasury on their most recent Federal Register at a limit of at least $10,000,000;
A.M. Best rating of "A" or better with a financial rating of at least "VIII"; and licensed as a surety in the state where the sale is to be made.

PERFORMANCE BOND

A performance bond will be supplied by the Successful bidders upon acceptance of the signed sales contract for the apparatus. The performance bond will be for an amount equal to the full contract price (i.e. 100% bond).

FAIR, ETHICAL AND LEGAL COMPETITION

In order to ensure fair, ethical, and legal competition, neither original equipment manufacturer (O.E.M.) nor parent company of the O.E.M. will have ever been fined or convicted of price fixing, bid rigging, or collusion in any domestic or international fire apparatus market.

INDEMNIFICATION

The contractor shall indemnify and save the District harmless from any and all claims, liability, losses, and causes of actions which may arise out of the fulfillment of this agreement. The bidder shall pay all claims and losses of any nature whatever in connection therewith, and shall defend all suits, in the name of the District when applicable, and shall pay all costs and judgments, which may ensue thereafter.

NON-COLLUSIVE BIDDING CERTIFICATION

By submission of this bid, the manufacture and each person signing on behalf of any bidder, certifies, and in the case of a joint bid, each party thereof certifies as to its own organization, under penalty of perjury, that to the best of their knowledge and belief:

- The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for purpose of restricting competition, as to any matter relating to sell prices with any other bidder or any competitor.
- Unless otherwise required by law, the prices that have been quoted in this bid have not been knowingly disclosed by the manufacture and will not knowingly be disclosed by the manufacture prior to opening, directly or indirectly, to any other bidder or to any competitor
- No attempt has been made by the manufacture to induce any other person, partnership, or corporation to submit or not to submit a bid for the purpose of restricting competition.
- That all requirements of the law including amendatory provisions as to non-collusive bidding have been complied with.

MATERIAL AND WORKMANSHIP

All equipment furnished will be guaranteed to be new and of current manufacture, to meet all requirements of purchaser's specifications.

All workmanship will be of high quality and accomplished in a professional manner so as to insure a functional apparatus with a pleasing, aesthetic appearance.

SALES ENGINEER

Manufacture will designate an in house individual to perform the manufactures sales engineer functions. The sales engineer will provide a single point interface between the purchaser and the manufacture on all matters concerning the contract.

APPROVAL DRAWING

A detailed drawing of the apparatus will be provided to Central Pierce for approval before construction begins. A copy of this drawing will also be provided to the manufacturer's representative. Upon approval, the finalized drawing will become a part of the total contract.

The drawing will show, but is not limited to, such items as the chassis make and model, major components, location of lights, sirens, all compartment locations and dimensions, special suctions, discharges, etc. The drawing will be a visual interpretation of the apparatus as it is to be supplied.

- Actual Drawing of dash gauges and switch locations and layout
- Driver and Passenger side Pump Panel
- Complete Vehicle to include all exterior lights, ladder rack and true location of all components as listed in this bid request
- At Completion of vehicle any and all drawing shall be provided to the purchaser for future use on apparatus purchases

DRAWING, PUMP OPERATOR'S PANEL

A detailed drawing, to scale, of the pump operator's panel and the passenger side pump panel shall be provided for the purpose of illustrating the standard location(s) of controls and discharges on the pump operator's panel. The drawing shall not be meant as an approval, or final construction drawing, rather it shall be used as an illustration drawing of a standard panel layout. This drawing shall include all of the gauges and controls located on the pump operator's panel. There shall also be a drawing of the pump panel for the driver and passenger side that will depict the finale location of all pump panel components and shall be signed by both the manufacture and purchaser prior to vehicle manufacture.

LIABILITY

The successful bidder shall defend any and all suits and assume all liability for the use of any patented process including any device or article forming a part of the apparatus or any appliance furnished under the contract.

SPECIFICATION BID REQUIREMENTS

Bidders shall also indicate in the "yes/no" column if their bid complies **on each item** (PARAGRAPH) specified. Exceptions shall be allowed if they are equal to or superior to that specified and provided they are listed and fully explained on a separate page.

Proposals taking total exception to specifications shall not be acceptable.

Also, bidders shall submit a detailed proposal. A letter only, even though written on a company letterhead, shall not be sufficient. Bid proposals shall be submitted in the same sequence as specifications for ease of evaluation, comparison and checking of compliance. **An exception to these requirements shall not be tolerated.**

EXCEPTIONS

All exceptions shall be stated no matter how seemingly minor and referencing Item and page number of this specification. Any exceptions not taken shall be assumed by the purchaser to be included in the proposal, regardless of the cost to the bidder.

SERVICE CENTER

The successful bidder shall provide a manufacturer certified warranty service center within 50 miles of the agency's headquarters station. If the successful bidder does not have a service center located within distance specified, they shall provide the purchaser the certification to perform those said warranty repairs at purchaser's, vehicle maintenance service center. The bidder shall reimburse purchaser for parts and labor for said warranty repaired at the purchaser's current shop maintenance rate at time of those warranty repairs. The service center shall be staffed with EVT and ASE certified mechanics. The service center shall have current

parts in stock and access to replacement parts direct from the manufacturer. The service center shall be capable of mounting intercom systems, additional shelving, hand tools and other equipment as needed by the department.

Facility Name: _____

Address: _____

Phone Number: _____

Contact Name: _____

Approximate Miles
From District: _____

Exception: YES_____ NO_____

Bidder's Page No. _____

WARRANTY

Each piece of new fire or rescue apparatus shall be warranted to be free from defects in materials or workmanship under normal use and service. Each manufacturer shall supply, as a part of their bid package, a copy of the warranty or warranties that they propose to provide, and in no case shall it be less than one- (1) year on the entire apparatus.

Bidder to provide extended warranty packages for up to five years of In-Service date of apparatus purchased, off of this specification. Extended Warranty packages to be supplied at time of bid submittal.

All other warranties, as outlined in these specifications shall be provided in writing as a part of the bid package.

Failure to provide the warranties as outlined throughout these specifications shall be cause for rejection of the bid package.

Manufacture shall pay out of service costs incurred for unit if the vehicle is out of service for warranty repairs or waiting for parts over five (120Hrs) consecutive days during said warranty period of vehicle and or component. If unit is out of service for five (120Hrs) concurrent days, manufacture agrees to pay out of service costs starting at the time of failure. (Formula for out of service costs determined on what the final purchasing price for this vehicle/'s of this specification) District will reserve the right to waive penalty clause per each occurrence and can only be authorized by the Asst. Chief of Logistics or his/her designee for the District. The vehicle/'s warranty shall also be extended by the number of days that effected unit is out of service for warranty repairs.

Exception: YES_____ NO_____
Bidder's Page No. _____
Option Price as stated_____

INSPECTION VISITS

The Successful Bidder will provide three (3) factory inspection trips to the manufactures facility. Transportation, meals, lodging, and other requisite expenses will be the bidder's responsibility with an option for the district to absorb all transportation and lodging expenses.

Accommodations shall be for up to four (4) Fire Department representatives per trip.

The factory visits shall occur at the following stages of production of the apparatus:

- Pre-construction / blueprint review.
- Midpoint completion of entire apparatus.
- Final inspection upon completion.

Travel arrangements more than 1000 miles from the manufacturing facility will be via commercial airline transportation.

Central Pierce maintains the right to inspect the apparatus, within manufacture's normal business hours. At any other point during construction expenses incurred during non-specified inspection visits will be the responsibility of the customer.

During inspection visits, the customer reserves the right to conduct actual performance tests to evaluate completed portions of the unit. Testing will be accomplished with the assistance and resources of the contractor.

SCOPE, PURPOSE AND CLASSIFICATION FOR BID PURPOSE

PURPOSE:
The purpose of this document is to provide minimum specifications and test parameters for the manufacture of a Type 1 Pumping Apparatus that meets the needs and desires of this agency. It establishes essential criteria for the design, performance, equipment, and appearance of the vehicle. All dimensions listed are given as the approximate sizes required to meet the needs of the department. The object is to provide a vehicle that is in accordance with nationally recognized guidelines. All vendors and manufacturers must meet all state and local regulations regarding the manufacturing, licensing, and sale of emergency vehicles within the state.

GENERAL:
This is an engineer, design, construct, and deliver type specification and it is not the intention of this agency to write out vendors or manufacturers of similar or equal equipment of the types specified. It should be noted, however, that this specification is written around the specific needs of this department. With the intent to standardize certain components, specific brands have been specified in certain places. This has been done to establish a certain standard of quality. Other brands will be accepted providing the vendor or manufacturer details how another brand will meet or exceed the quality of the actual brand specified. Because of this, the Review Board reserves the right to accept or reject any and/or all bids.

The Type 1 Pumping Apparatus vehicle, chassis, body, equipment, devices, accessories, and electronic equipment to be delivered under this contract shall be standard commercial products that meet or exceed the requirements of this specification. The apparatus shall comply with all Federal Motor Vehicle Safety Standards (FMVSS) and Federal regulations applicable or specified for the year of manufacture. The chassis, components,

and optional items shall be represented in the manufacturer's current technical data. Materials used in the construction shall be new and not less than the quality conforming to current engineering and manufacturing practices. Materials shall be free of defects and shall be suitable for the intended use.

Any exceptions to these specifications must be clearly pointed out. Otherwise, it will be considered that the items offered are in strict compliance with the written specifications and that the successful bidder will be responsible for delivering a vehicle meeting these specifications. Any exceptions must be marked as such within the body of the bid and explained on a separate page marked "EXCEPTIONS".
Because of the above facts, price may not be the major consideration in making an award. Bid award may be given to the vendor whose bid comes closest to meeting these specifications at the most competitive price.
Bidder may be required to provide a current model year demonstrator vehicle of the type bid, for viewing and demonstration purposes at the District's location, within seven- (7) days of bid opening.

SITE(S) OF WORK:
The vehicle(s) and its equipment shall be delivered F.O.B. to this agency. Credit for acceptance at the factory and District drive out shall be provided on the bid quote page. Prices shall be quoted on a delivered, and accepted on a one-by-one basis. Vehicles manufactured outside of the United States shall not be considered.

EXAMINATION OF SPECIFICATION:
Each bidder is required before submitting their proposal, to be thoroughly familiar with the specifications contained herein. No additional allowances will be made because of a lack of knowledge of these conditions. It is the responsibility of the successful bidder to ascertain if any components of this specification are unsafe or do not meet the required standard of applicable state law or those of NFPA 1901, 2009 or most current version. Should there be any unsafe or poorly designed criteria contained herein, the bidder shall thoroughly explain them to the District in the Bid proposal.

DEFINITIONS:
The following definitions shall apply with regard to these specifications.

DISTRICT / PURCASHER
The end user of the equipment specified, or the applicable purchase agency if more than one- (1).

CONTRACTOR:
The individual, firm, partnership, manufacturer or corporation to whom the contract is awarded by the District and who is subject to the terms thereof. For bidding purposes the contractor, vendor, and bidder are synonymous.

EQUAL:
Shall be taken in its general sense and shall not mean identical. These specifications are intended to establish minimum requirements of a level of quality, standards of performance, and design and are in no way intended to prohibit the bidding of any manufacturer's item of equal material.

Note: The District shall be the sole judge of equality and this decision shall be final.

INSTRUCTION MANUALS/DRAWINGS, SCHEMATIC

The manufacture will supply at time of delivery, two (2) CD copies of a complete operation and service manual covering the complete apparatus as delivered and accepted.

The manual will contain the following:

- Descriptions, specifications, and ratings of chassis, pump (if applicable), and aerial device.
- Wiring diagrams.
- Lubrication charts.
- Operating instructions for the chassis, any major components such as a pump and any auxiliary systems.
- Instructions regarding the frequency and procedures recommended for maintenance.
- Parts replacement information.

INSTRUCTION MANUALS/DRAWINGS, SCHEMATIC

Manufacture will supply at time of delivery, two (2) sets, paper copies of a complete operation and service manual covering the complete apparatus as delivered and accepted.

The manual will contain the following:

- Descriptions, specifications, and ratings of chassis, pump (if applicable), and aerial device.
- Wiring diagrams.
- Lubrication charts.
- Operating instructions for the chassis, any major components such as a pump and any auxiliary systems.
- Instructions regarding the frequency and procedures recommended for maintenance.
- Parts replacement information.

"AS BUILT" WIRING SCHEMATICS

In accordance with standard commercial practices, manufacture will supply two (2) copies of "AS BUILT" wiring schematics/diagrams for the entire vehicle at the time of delivery. Two copies each, electronic and paper for shall be provided.

VEHICLE FLUIDS PLATE

As required by NFPA-1901, manufacture shall affix a permanent plate in the driver's compartment specifying the quantity and type of the following fluids used in the vehicle:

A permanent plate in the driving compartment will specify the quantity and type of the following fluids used in the vehicle:

- Engine oil
- Engine coolant
- Chassis transmission fluid
- Pump transmission lubrication fluid
- Pump primer fluid
- Drive axle(s) lubrication fluid
- Air-conditioning refrigerant
- Air-conditioning lubrication oil
- Power steering fluid
- Cab tilt mechanism

- Transfer case fluid
- Equipment rack fluid
- Air compressor system lubricant
- Generator system lubricant
- Aerial systems

PRIMARY PLANT CONSTRUCTION

In order to insure top quality construction, maximum assembly line and engineering communication and the highest level of manufacturing supervision the entire apparatus will be built at the manufactures (headquarters) manufacturing facility.

PROPOSAL BLUEPRINT

Manufacture shall provide a scaled drawing of the specific apparatus being proposed WITH THE BID. The drawing has been generated by manufactures engineering department in order to maintain the accuracy of the drawing.

FAMA MEMBERSHIP

The Fire Apparatus manufacture shall be a member of the Fire Apparatus Manufacturer's Association (FAMA).

U.S.A. MANUFACTURER

The entire apparatus will be assembled within the borders of the Continental United States to insure more readily available parts (without added costs and delays caused by tariffs and customs) and service.

QUALITY MANAGEMENT

Manufacture shall be a certified ISO 9001 at all company locations. Manufacture shall acquire its certification from TÜV SÜD America Inc. after they assessed the company's quality system and found it to be in full compliance with ISO 9001. TÜV's is accredited as a registrar by ANSI-ASQ National Accreditation Board (ANAB), the organization responsible for qualifying registrars as competent to audit and certify organizations conforming to ISO 9001 or other management system standards.

The International Organization for Standardization (ISO) is a worldwide federation of national standards bodies from 130 countries. Its ISO 9001 standard is a quality assurance model made up of 20 sets of quality system requirements. This model applies to organizations that design, develop, produce, install, and service products.

This business management system allows the manufacture to monitor processes to ensure they are effective; keep adequate records; check output for defects, with appropriate and corrective action where necessary; regularly review individual processes and the quality system itself for effectiveness; and facilitate continual improvement.

A copy of the manufactures certificate shall be included in this proposal.

STEPPING, STANDING, & WALKING SURFACES

All stepping, standing, and walking surfaces on the body will meet NFPA #1901, (2009 edition) anti-slip standards. Aluminum tread plate utilized for stepping, standing, and walking surfaces will be Alcoa No-Slip type. This material will be a minimum 3/16 (0.1875") in thickness. The manufacture will supply proof of compliance with this requirement. All vertical surfaces on the body, which incorporate aluminum tread plate material, will utilize the same material pattern to provide a consistent overall appearance.

AMP DRAW REPORT

The bidder shall provide with their bid proposal and at the time of delivery, an itemized print out of the expected amp draw of the entire vehicle's electrical system.

A written load analysis, which shall include the following:

- The rating of the alternator.
- The minimum continuous load of each component that is specified per: Applicable NFPA-1901.
- Additional loads that, when added to the minimum continuous load, determine the total connected load.
- Each individual intermittent load.

All of the above listed items shall be provided by the bidder per the applicable NFPA-1901.

COOPERATIVE PURCHASING

Manufacture shall allow other public agencies to use the purchase agreement resulting from this invitation to bid. The condition of such use by other agencies will be that any such agency must make and pursue contact, purchase order/contract, and all contractual remedies with manufacture. Such tag-on's will be done so that the original purchasing agency has no responsibility for performance by either the manufacture or the agency using the contract.

UNDERWRITERS LABORATORIES INC. (UL) EXAMINATION AND TEST PROPOSAL

If required by the specific chapters of NFPA-1901(2009 edition), the proposed unit will be tested and certified for the Apparatus manufacture by Underwriters Laboratories Inc. (UL) Underwriters Laboratories Inc. (UL) is recognized worldwide as a leading third party product safety certification organization for over 100 years. UL has served on National Fire Protection Association (NFPA) technical committees for over thirty years.

INDEPENDENT TESTING ORGANIZATION QUALIFICATIONS

- UL is a nationally recognized testing laboratory recognized by OSHA.
- UL complies with the American Society for Testing and Materials (ASTM) Standard ASTM E543 "Determining the Qualifications for Nondestructive Testing Agencies."
- UL has more than 40 years of automotive fire apparatus safety testing experience and 16 years of factory aerial device testing and Certification experience. UL has more than 100 years of experience developing and implementing product safety standards.
- UL does not represent, is not associated with, nor is in the manufacture or repair of automotive fire apparatus.
- All test work for fire pumps outlined in NFPA 1901, Edition will be conducted.

- UL has included a list of all factory aerial device manufacturers for whom testing is currently being conducted on a regular basis.
- UL carries ten million dollars in excess liability insurance for bodily injury and properly damage combined.

All work outlined in NFPA 1914, current Edition, including nondestructive testing, will be conducted at the manufacturer's facility.

The UL inspectors performing the test work on the units are certified to Level II in the required NDT methods, under the requirements outlined in ASNT document CP-189.

The actual person(s) performing the inspection will present for review proof of Level II Certification in the required NDT methods.

Manufacture will designate, in writing, who is qualified to witness and certify these test results.

Prior to submittal to the automotive fire apparatus manufacturer, the final Report will be reviewed by the Supervisor of Fire Equipment Services and a Registered Professional Engineer, both of whom are directly involved with the aerial device certification program at UL.

When the unit successfully meets all the requirements outlined in NFPA 1901, 2009 Edition, UL shall issue a Certificate of Automotive Fire Apparatus Examination and Test stating the unit's compliance with NFPA- 1901.

GENERAL APPARATUS DESCRIPTION "PUMPER"

The unit shall be designed to conform fully to the "Pumper Fire Apparatus" requirements as stated in the NFPA 1901 Standard (2009 Revision), which shall include the following required chapters as stated in this revision:

- Chapter 1 Administration
- Chapter 2 Referenced Publications
- Chapter 3 Definitions
- Chapter 4 General Requirements
- Chapter 5 Pumper Fire Apparatus
- Chapter 12 Chassis and Vehicle Components
- Chapter 13 Low Voltage Electrical Systems and Warning Devices
- Chapter 14 Driving and Crew Areas
- Chapter 15 Body, Compartments and Equipment Mounting
- Chapter 16 Fire Pumps and Associated Equipment
- Chapter 18 Water Tanks

CAB SAFETY SIGNS

The following safety signs shall be provided in the cab:

- A label displaying the maximum number of personnel the vehicle is designed to carry shall be visible to the driver.

- "Occupants will be seated and belted when apparatus is in motion" signs shall be visible from each seat.
- "Do Not Move Apparatus When Light Is On" sign adjacent to the warning light indicating a hazard if the apparatus is moved (as described in subsequent section).
- A label displaying the height, length, and GVWR of the vehicle shall be visible to driver.
- This label shall indicate that the fire department will revise the dimension if vehicle height changes while vehicle is in service.

CHASSIS DATA LABELS

The following information shall be on labels affixed to the vehicle:

Fluid Data

- Engine Oil
- Engine Coolant
- Chassis Transmission Fluid
- Pump Transmission Lubrication Fluid
- Pump Primer Fluid (if applicable)
- Drive Axle(s) Lubrication Fluid
- Air Conditioning Refrigerant
- Air Conditioning Lubrication Oil
- Power Steering Fluid
- Cab Tilt Mechanism Fluid
- Transfer Case Fluid (if applicable)
- Equipment Rack Fluid (if applicable)
- Air Compressor System Lubricant
- Generator System Lubricant (if applicable)
- Front Tire Cold Pressure
- Rear Tire Cold Pressure
- Aerial Hydraulic Fluid (if applicable)
- Maximum Tire Speed Rating
- Refrigerant oil type
- Refrigerant charge

Chassis Data

- Chassis Manufacturer
- Production Number
- Year Built
- Month Manufactured
- Vehicle Identification Number

Manufacturers weight certification:

- Gross Vehicle (or Combination) Weight Rating (GVWR or GCWR)
- Gross Axle Weight Rating, Front
- Gross Axle Weight Rating, Rear

ROLLOVER STABILITY

The apparatus shall meet the criteria defined in 4.13.1 for rollover stability as defined in the 2009 NFPA Standard for Automotive Fire Apparatus.

SEAT BELT ANCHOR TESTING

Each seat belt anchor shall be tested to withstand 3,000lbs of pull on both the lap and shoulder belt in accordance with FMVSS 210 section 4.2.

SEAT MOUNTING TESTING

Each seat mounting position shall be tested to withstand 20G's of force in accordance with FMVSS 207 section 4.2(c).

Both tests shall be performed and verified at a third party testing and evaluation center.

2. **** CAB AND CHASSIS ****

2.1 CAB TYPE

Exception:
Yes_____ No:_____

Bidders Page# _____

- **FULL TILT**
- **CONTOUR WINDSHIELD**

The cab shall be a custom tilt style, built specifically for fire service. The cab shall be a cab over engine design, with integral tilt mechanism and engine access from inside the cab.

Cab shall be designed, fabricated, assembled in its entirety, and installed on the frame rails in the manufacturer's factory. This requirement will eliminate any split responsibility in warranty and service.

2.2 OPEN SPACE DESIGN

Exception:
Yes_____ No:_____

Bidders Page# _____

The cab interior shall be the "Open-Space" design with no wall, window or vertical support posts between the front and rear crew areas to allow direct communication, better visibility and air circulation in the cab.

2.3 CAB MATERIAL - ALUMINUM

Exception:
Yes_____ No:_____

Bidders Page# _____

The cab shall be fabricated from 5052-H 32 aluminum alloy, utilizing the minimum material thickness as follows:

- Cab side panels 0.125 thick (1/8")
- Cab roof 0.125 thick (1/8")
- Forward cab front sheet 0.125 thick (1/8")
- Interior cab panels 0.125 thick (1/8")
- Other panels 0.125 thick (1/8")
- Cab doors 0.1875 thick (3/16")
- Engine enclosure side panels 0.250 thick (1/4")

2.4 CAB - BASE CONSTRUCTION

Exception:
Yes_____ No:_____

Bidders Page# _____

Cab sub-frame shall be a welded assembly fabricated of 6063 structural aluminum alloy. This frame shall extend the full length and width of the cab and be secured to the chassis frame through two (2) rear urethane self-centering load cushions, two (2) forward pivot brackets, and two (2) cab locks. The cab shall be of entirely welded construction.

The front cab wall shall be of double wall type construction, featuring an inner and outer panel.

2.5 CRASH TESTING CERTIFICATION

Exception:
Yes_____ No:_____

Bidders Page# _____

To ensure the safety of the cab occupants and cab integrity, proof of third party testing shall be provided. The cab shall be certified for SAEJ2422 side impact, SAEJ2420 with ECER29 cab front impact, and ECER29 cab roof strength.

Furthermore, proof of testing and certification shall be provided that the cab, in accordance to SAE J2420 was front impact tested at 2.1 times the standard energy required in SAE J2420, thus exceeding the NFPA requirement.

This test shall be performed with no support immediately behind the cab, thus providing an authentic test result.

2.6 ROOF AND SIDE LOAD TESTING

Exception:
Yes_____ No:_____

Bidders Page# _____

The cab design will include additional third party testing to ensure the safety of the cab occupants and cab integrity, proof of third party testing shall be provided. The cab shall be certified for SAEJ2422 side impact, SAEJ2420 with ECER29 cab front impact, and ECER29 cab roof strength.

The manufacturer shall provide proof that third party testing has been conducted to prove a static roof and a static side-load test has been completed. In these tests, a 120,000 pound static load was first applied to the roof. This test was followed by applying the same 120,000 pound static load to the side of the cab.

These tests will be conducted per the SAE J2422, Cab Roof Strength Evaluation, protocol and the ECE R29, Uniform provisions concerning the approval of vehicles with regard to the protection of occupants of the cab of a commercial vehicle, protocol.

During both tests, the cab will withstand these loads without encroachment into the occupant survivable space and all doors remained closed during the test. The tests will be documented with photographs and real-time video in a report provided to the manufacturer.

2.7 DIMENSIONS - LONG FOUR DOOR STYLE CAB

Exception:
Yes_____ No:_____

Bidders Page# _____

2.7.1 Minimum Cab Dimensions:

- Overall width 100"
- Inside width across ceiling 92"
- Front area floor to ceiling 63"
- Top of front seat to ceiling 44" (depending upon seat type)
- Seat back to steering wheel 22" (depending upon seat type)
- Inside width (door to engine enclosure) 24" (driver's side, at floor)
- Inside width (door to engine enclosure) 20-1/2" (officer's side, at floor)
- Crew seat area width 92"
- Outer crew seat risers to rear wall 56-1/2"
- Centerline axle to rear wall 74-1/2"
- Floor to top of engine enclosure 30"
- Centerline axle to front of cab 74”

2.7.2 Glass Area Dimensions:

Exception:
Yes_____ No:_____

Bidders Page# _____

- Windshield (Contour) 3,422 sq. in.
- Front door window, retractable 743 sq. in. each
- Rear door window, retractable 875 sq. in. each
- Side fixed crew windows 620 sq. in. each

2.7.3 Cab Entry Door Width Dimensions

Exception:
Yes_____ No:_____

Bidders Page# _____

- Forward door opening 40" wide
- Rear door opening 37" wide

2.7.4 Cab Entry Step Dimensions

Exception:
Yes_____ No:_____

Bidders Page# _____

- Forward door recessed step 32" wide x 9" deep
- Rear door recessed step 32" wide x 9" deep

2.7.5 Cab Entry Door Height Dimensions

Exception:
Yes_____ No:_____

Bidders Page# _____

- Forward door opening 76-1/4" high
- Rear door opening 85-1/4" high

2.8 CAB ROOF

Exception:
Yes_____ No:_____

Bidders Page# _____

The roof will be of a split level design with radius edges for an aesthetic, streamline appearance. The roof shall be constructed the same material as the main structure and shall be internally reinforced using framing which shall span the entire width and length of the cab for maximum structural integrity. This shall allow the roof to support personnel and roof mounted equipment without the need for additional reinforcement.

The cab roof over the rear crew area shall be raised ten (10) inches higher than the front driver and officer area. The front face of the raised roof section shall be sloped at a 45 degree angle, creating a streamlined interface with the standard, lower, forward roof section. This design shall allow for additional interior height in the rear crew area.

The rear crew area doors shall be "Vista-Style", extending full height to the radius edge of the raised roof.

Approximate dimensions:

- Crew area floor to ceiling 64"
- Top of crew seat to ceiling 46" (depending upon seat type)

2.9 CAB ROOF DRIP RAIL

Exception:
Yes_____ No:_____

Bidders Page# _____

For enhanced protection from inclement weather, a drip rail shall be furnished on the sides of the cab. The drip rail shall be constructed of bright polished extruded aluminum or equivalent and be fastened to the sides of the cab roof edge. The drip rail shall extend the full length

of the cab roof. Drip rails to be permanently attached to cab. Adhesive Material alone is not acceptable.

2.10 CAB ROOF DRIP RAIL

Exception:
Yes_____ No:_____

Bidders Page# _____

For enhanced protection from inclement weather, an integral drip rail shall be furnished on each side of the cab roof. The drip rail shall extend the full length of the cab roof. Drip rails to be permanently attached to cab. Adhesive Material alone is not acceptable.

2.11 CAB DOORS

Exception:
Yes_____ No:_____

Bidders Page# _____

Four (4) side-opening doors shall be provided. The cab doors shall be totally aluminum construction with an extruded aluminum frame and an aluminum outer door skin. Doors shall be full height from the step to the cab roof extrusion and enclose the step area when the doors are closed.

The forward cab door opening shall be a minimum of 40" wide, and the rear cab door opening shall be a minimum of 37" wide. The rearward cab doors shall have a radius cutout allowing the door opening to protrude forward over the cab wheel well, while providing full access to the rear crew area.

There shall be a heavy duty piano type stainless steel hinge on each door with a minimum pin diameter of 5/16". Hinges shall be slotted for ease of horizontal and vertical adjustment. There shall be a cab door seal and the doors shall close flush with the side of the cab. A heavy-duty 2 1/2" wide reinforced rubber strap shall be utilized to prevent the cab doors from opening greater than 90 degrees.

2.12 ENTRY STEP AREA

Exception:
Yes_____ No:_____

Bidders Page# _____

Each of the forward entrance steps shall be a minimum of 8-1/2" deep with the floor board recessed a minimum of 5" to avoid "shin knocking". Each step shall be a bolt-in cast aluminum step. The cab steps risers shall be overlaid with bright finish aluminum tread plate.

Each of the rear entrance steps shall be a minimum of 8-1/2" deep. An intermediate step shall be provided between the lower entrance step and the crew area floor for ease of entry and egress. Each upper section of the steps and respective step risers shall be constructed as an integral part of the cab construction and shall be overlaid with bright finish aluminum tread plate. Each lower step shall be a bolt-in cast aluminum step.

2.13 DOOR LATCHES

Exception:
Yes_____ No:_____

Bidders Page# _____

A semi-recessed chrome plated pull handle, capable of operating with a gloved hand, shall be provided on the exterior of each cab door. Heavy-duty, bright finish cast paddle latches shall be provided on the interior of each cab door. Door latch mechanisms which utilize spring steel clamps shall not be considered due to their tendency to both rust and break. The interior door latch cables are to be designed to reduce adjustment or possible wear at the adjustment turnbuckles.

2.14 LOCKING CAB DOORS

Exception:
Yes_____ No:_____

Bidders Page# _____

Each exterior cab door shall be equipped with keyed electric door locks. The cab doors shall be capable of being locked from the outside with a key and from the inside with a control in each interior paddle latch.

2.14.1 Price option for electric door and compartment locks to be locked and unlocked by any door or compartment actuator shall be provided at time of bid proposal. Touch pad to electronically unlock all doors is requested for the driver's side and passenger side of cab.

2.15 ELECTRIC WINDOWS

Exception:
Yes_____ No:_____

Bidders Page# _____

Each side cab door shall have a tinted retractable window. The window track shall be designed into the door frame extrusion, which shall be extruded with a track groove to house a window track and seal. The window shall be capable of being removed from an access slot designed in the bottom of the door frame.

All side cab doors shall be equipped with electrically operated windows.

The driver shall have a control to operate the officer's side window and the rear cab windows, in a panel located on the dash. The officer side window control shall be in a panel on the dash.

The control for each rear door shall be a rocker type automotive style switch located on the inside door panel within easy reach.

Each side cab door window shall be designed with a custom extruded trim plate, which shall conform to the perimeter of the window opening in each door. The trim plate shall extend from the edge of the door skin to the window and shall have a silver anodized finish.

2.15.1 A price option shall be provided at time of bid proposal for extended warranties on window motors and regulators to include labor coverage.

2.16 INNER DOOR PANELS

Exception:
Yes_____ No:_____

Bidders Page# _____

The cab door interior panels shall be covered with a one piece, brushed stainless steel panel, full height. The panel shall be 16 gauge stainless steel with a brushed finish and shall be designed to allow easy access to the inner door.

2.17 DOOR PANEL UPHOLSTERY

Exception:
Yes_____ No:_____

Bidders Page# _____

The upper 1/3rd of the door panels will be covered with gray durawear.

Each interior cab door panel shall be equipped with reflective ScotchLite material that shall cover at least 96 in².

2.18 CAB DOOR FRAME AND JAMB SCUFF PLATES

Exception:
Yes_____ No:_____

Bidders Page# _____

A polished stainless steel trim plate shall be provided rearward of each cab door opening to protect the vertical cab corner rearward of the door opening and on the cab door striker posts to protect the cab paint when exiting and entering the cab.

2.19 WINDSHIELD/GLASS

Exception:
Yes_____ No:_____

Bidders Page# _____

A two piece, symmetrical, safety glass windshield shall be provided on the cab for the driver and officer providing a clear viewing area. The windshields shall be full width to the center of the front cab support for each side and provide the occupants with a panoramic view. To provide enhanced peripheral vision on each side of the cab, the windshield and cab structure shall be designed with radius corners, which provide a minimum of 8" of glass area, measured from the glass face to the side edge near the door post. The windshield shall consist of three (3) layers; the outer light, the middle safety laminate and the inner light. The thick outer light layer shall provide superior chip resistance, the middle safety laminate layer shall prevent the windshield glass pieces from detaching in the event of breakage and the inner light shall provide yet another chip resistant layer.

The windshield will be a contour design with 3422 sq. in. of area for improved visibility and style. The windshield glass shall be designed so it can be used on either the driver or officer side. Single piece windshields that utilize epoxy or that are bonded to the cab structure shall not be acceptable.

2.20 WINDSHIELD WIPERS AND WASHER

Exception:
Yes_____ No:_____

Bidders Page# _____

Dual, electric operated, pantographic type windshield wipers shall be provided. One (1) electric drive motor shall be provided for each wiper.

Wipers shall have "HI/LO" and "INTERMITTENT" operating speeds. "HI/LO" speeds shall be controlled by a steering column control, within the turn signal control stem. "INTERMITTENT" operation shall be controlled by a twist switch within the control on the steering column. The wipers shall be of the self-parking type.

Windshield washers shall be electric operated wet-arm type with a 3/4 gallon washer fluid reservoir, mounted inside the engine enclosure and readily accessible through the engine hatch at the rear of the engine enclosure. The washer control shall be integral with the intermittent wiper control switch.

There shall be individual removable panels on the front face of the cab for access to the wiper motor assemblies.

2.21 WINDSHIELD WIPER DURABILITY CERTIFICATION

Exception:
Yes_____ No:_____

Bidders Page# _____

Windshield wipers shall survive testing in excess of 3 million cycles in accordance with section 6.2 of SAE J198 “Windshield Wiper Systems – Trucks, Buses and Multipurpose

Vehicles". The bidder shall certify that the wiper system design has been "Third party tested" and that the wiper system has met this criteria.

2.22 CAB SIDE VIEWING WINDOWS

Exception:
Yes_____ No:_____

Bidders Page# _____

A fixed, tinted window with 620 sq. in of glass area shall be provided on each side of the cab behind the forward cab doors. This window will be the same height as the window in the rear cab door for maximum visibility.

2.23 DARK TINTED REAR WINDOW GLASS

Exception:
Yes_____ No:_____

Bidders Page# _____

The windshield and the forward cab door glass shall be provided with standard DOT green automotive tint. The side cab windows to the rear of the front doors, the rear cab door windows and any rear viewing windows shall be equipped with a dark automotive tint.

2.24 GRAB HANDLES

Exception:
Yes_____ No:_____

Bidders Page# _____

Four (4) 1-1/4" diameter x 28" long, knurled stainless steel, grab rails shall be provided, one (1) at each cab door entrance. Grab rail stanchions shall be chrome plated and of an offset design, when necessary, to prevent "hand-pinching" when opening or closing the doors. Formed rubber gaskets shall be provided between each stanchion base and the cab surface. Fasteners shall be nutsert or ASE fastener attached. Sheet metal or self-tapping screws are unacceptable.

2.25 BUMPER GRAB RAIL

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) Hansen 1-1/4" diameter x 14" long, knurled stainless steel, grab rail shall be provided on the front of the cab, below the windshield. Formed rubber gaskets shall be provided between each stanchion base and the cab surface.

2.26 INTERIOR GRAB RAILS

Exception:
Yes_____ No:_____

Bidders Page# _____

Grab rails shall be provided to assist in entry and exiting of the cab. Each grab rail shall be a cast aluminum "D" style handle that shall have a wheelabrated finish and shall be located in the following locations:

- Three (3) 12" long, vertically mounted, one (1) on the officer's side of the cab interior "A" post and one (1) on each side of the cab interior on the "C" post in the crew area
- One (1) 11" long, horizontally mounted, on each front cab door on the interior door panel
- One (1) 11" long, horizontally mounted, on each rear cab door on the interior door panel
- One (1) 30" long, horizontally mounted, on each rear cab door, located approximately 8" above the bottom of the window opening.

- One (1) 12" long, vertically mounted, one (1) on the driver's side cab interior on the "A" post.

One (1) grab rail, incline mounted, on each rear cab door, located below the window opening and starting low on the rear edge of the cab door and angling upward toward the forward edge, just below the window. Exact layout will be determined at the pre-construction conference. Fasteners shall be nutsert or ASE fastener attached. Sheet metal or self-tapping screws are unacceptable.

2.27 FRONT CAB GRILL

Exception:
Yes_____ No:_____

Bidders Page# _____

There shall be a bright finished, custom formed grille assembly for maximum air flow to the charge air cooler and the radiator. The grille shall be designed with an aesthetic look, with large horizontal louvers that will be reinforced to provide integrity. The grill design shall match the thickness of the headlights to provide a streamlined, cohesive front trim package.

An Black bug screen shall be provided behind the front grill assembly to protect the radiator from bugs and other debris. The screen shall be secured to the front of the cab, behind the main grill. Fasteners shall be nutsert or ASE fastener attached. Sheet metal or self-tapping screws are unacceptable.

2.28 AIR INTAKE/OUTLET

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) bright finished, custom formed air inlets/outlets shall be provided horizontally above the wheel well opening, one on each side of the cab. The grille shall be designed with an aesthetic look with horizontal louvers that will be equipped with a mesh screen to serve as a secondary ember separator. The side intakes shall be bolstered a minimum of 1" from the skin of the cab face. The design shall permit proper ducting of air through the engine compartment and cooling system.

2.29 ENGINE AIR INTAKE SYSTEM

Exception:
Yes_____ No:_____

Bidders Page# _____

The left side inlet, used for the air intake to the air cleaner, shall be equipped with dual ember separators for separating burning embers from the air intake system. This system shall be such that particles larger than .039 inches (1 mm) in diameter cannot reach the air filter element.

No part of the air intake system for the engine shall be lower than the top of the frame rails to ensure the vehicle can navigate pooled water without any part of the air intake system being exposed to water when the vehicle is stopped or in motion. Chassis designs, which the engine air intake system is lower than the frame rails shall not be acceptable!

A mesh screen shall be provided behind the side grill assembly to protect the intake from debris.

2.30 WHEEL WELL LINERS

Exception:
Yes_____ No:_____

Bidders Page# _____

The front cab wheel wells shall be equipped with fully removable, bolt-in inner wheel well liners. The liners shall extend full depth into the truck frame. The completely washable wheel well liners shall be designed to protect the cab substructure, inner panels, and other miscellaneous installed components from road salts, debris, dirt accumulation and corrosion.

2.31 FENDERETTES

Exception:
Yes_____ No:_____

Bidders Page# _____

The cab wheel well openings shall be trimmed with replaceable, bolt-in, polished stainless steel fenderettes. The fenderettes shall be secured to the cab with stainless steel threaded fasteners along the internal perimeter of the wheel well. Dissimilar metal tape and black vinyl trim molding shall be used where the cab and fender meet.

2.32 FRONT MUD FLAPS

Exception:
Yes_____ No:_____

Bidders Page# _____

Heavy duty, black rubber type mud flaps shall be provided behind the front wheels.

2.33 VELVAC MIRRORS "V-MAX" CHROME - HEATED-REMOTE w/ ARROW

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) Velvac V-MAX mirrors 715662 and 715663 shall be furnished. Each mirror will have a 98.7 sq. in flat glass head and a 30 sq, in convex head mounted in a one piece injection molded chrome plated ABS plastic housing. All heads shall be electrically heated, controlled by one (1) switch on the dash convenient to the driver. The upper flat glass position shall be controlled by a dual purpose, four way selector switch on the dash, convenient to the driver. This switch allows the driver to select either the officer side mirror or the driver side mirror; the lower convex sections shall be manually adjustable.

The mirror heads shall be installed on a Model 2025 one piece, chrome plated die cast aluminum, fixed arm bracket, mounted on the forward portion of each front door below the side windows. Each mirror will have an arrow type turn signal indicator in the outboard area of the flat glass head. These indicators will work in conjunction with the turn signals.

2.35 INTERIOR CAB TRIM

Exception:
Yes_____ No:_____

Bidders Page# _____

The cab interior shall be constructed to create an ergonomically designed interior to be user friendly and functional for the driver and officer.

The forward overhead panel shall be covered with a three (3) piece custom formed ABS vinyl overlay, which shall have integrated windshield defroster/heat vents and four (4) comfort vents.

All ABS formed material panels, as well as all of the interior upholstery panels shall be medium gray in color. The upholstered cab overhead and side wall portions shall utilize gray Durawear upholstery with padding underneath to provide additional insulation.

The interior metal surfaces of the cab shall be finish painted with a textured gray paint. Fasteners shall be nutsert or ASE fastener attached. Sheet metal or self-tapping screws are unacceptable.

2.36 HEADLINER FASTENERS

Exception:
Yes_____ No:_____

The headliner will be fastened to the cab sub-structure utilizing threaded nutserts ASE threaded fasteners.

Bidders Page# _____

2.37 INTERIOR REAR WALL

Exception:
Yes_____ No:_____

The interior rear wall of the cab shall be covered with gray Durawear for durability and shall match the other upholstered areas of the cab.

Bidders Page# _____

A twelve (12) inch high bright finish aluminum tread plate scuff plate shall be provided on the lower portion of the rear interior cab wall.

Fasteners shall be nutsert or ASE fastener attached. Sheet metal or self-tapping screws are unacceptable.

2.38 UNDER SEAT STORAGE COMPARTMENTS

Exception:
Yes_____ No:_____

There shall be a compartment provided under each front seat. Each compartment shall be accessible from the front of the seat riser when the door is opened.

Bidders Page# _____

2.39 BARYFOL FLOORING

Exception:
Yes_____ No:_____

The floor of the driver's compartment and the floor of the crew area shall be lined with BARYFOL vinyl composite flooring to comply with NFPA noise and heat requirements.

Bidders Page# _____

The material utilized for this application shall be certified to meet the NFPA 1901, 2009 revision for anti-slip walking surfaces.

2.40 CAB ACOUSTICAL INSULATION

Exception:
Yes_____ No:_____

One (1) inch thick acoustical insulation shall be provided on the cab roof and rear and side walls of the cab. This material shall be fitted between the cab structural members and secured with adhesive to provide an insulation barrier for noise and heat.

Bidders Page# _____

2.41 ENGINE ENCLOSURE

Exception:
Yes_____ No:_____

The forward portion of the engine enclosure shall be covered with a **dark gray vinyl** material. To allow maximum "elbow room" for the driver and officer, the forward portion of the engine enclosure shall feature a contour shape. The engine enclosure shall not significantly obstruct the driver's vision in any direction. The enclosure shall be an integral part of the cab structure, which shall be constructed from .250 5052-H32 aluminum, providing adequate strength to support radio, map boxes, etc. The engine enclosure shall be insulated to protect from heat and sound. The noise insulation shall keep the DBA level within the limits stated in the current NFPA series 1901 pamphlet.

Bidders Page# _____

A padded, hinged access door shall be provided in the top rearward portion of the engine enclosure. The door shall allow access to the engine oil, transmission fluid, power steering fluid level dipsticks and the windshield washer fluid reservoir. The access door shall be provided with two (2) flush mounted latches and gas shock holders. There shall be a

Durawear material cover over the access door to give a cleaner look to the top of the engine enclosure and doghouse area.

Each side of the engine enclosure shall be reduced approximately 2" in width, providing additional leg room for the forward facing seating position/s.

Fasteners shall be nutsert or ASE fastener attached. Sheet metal or self-tapping screws are unacceptable.

Exception:
Yes_____ No:_____

2.42 SUN VISORS

Bidders Page# _____

To provide maximum protection for the driver and officer, two (2) padded vinyl sun visors shall be mounted in the cab overhead on each side.

3.0 *** CAB SEATING & ACCESSORIES *****

Exception:
Yes_____ No:_____

3.1 DRIVERS SEAT

Bidders Page# _____

The driver's seat shall be a H. O. Bostrom Sierra Air-50RX/HD/ABTS LH air suspension, high back bucket seat. The seat shall have a tapered and padded seat cushion with lumbar support. The seat shall have a five inch fore and aft adjustment, a three inch height adjustment with a reclining seat back. The seat air ride suspension shall be pneumatically controlled from a control switch on the forward lower edge of the seat.

The seat shall be equipped with a red integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

Exception:
Yes_____ No:_____

3.2 OFFICERS SEAT

Bidders Page# _____

The officer's seat shall be a H. O. Bostrom Tanker 450 Air-50 RX/ABTS RH series air-suspension, SCBA seat. The seat shall have a tapered and padded seat cushion with lumbar support. The seat shall have a five inch fore and aft adjustment, a three inch height adjustment with a reclining seat back. The seat shall include a SCBA storage area with integral headrest. The seat air ride suspension shall be pneumatically controlled from a control switch on the forward lower edge of the seat.

The seat shall be equipped with a red integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

The officer's seat shall include a H. O. BOSTROM Secure All™ SCBA Locking System. The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the tank in-place for a safe and comfortable fit in seat cavity. Fire fighters shall simply push the SCBA unit against the pivot

arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

3.3 DELETE REAR FACING, OUTBOARD, DRIVER SIDE SEAT

Exception:
Yes_____ No:_____

There shall not be a crew seat provided in the rear facing driver's side position to allow for mounting of compartments and/or other specified equipment.

Bidders Page# _____

3.4 DELETE REAR FACING, OUTBOARD, OFFICER SIDE SEAT

Exception:
Yes_____ No:_____

There shall not be a crew seat provided in the rear facing officer's side position to allow for mounting of compartments and/or other specified equipment.

Bidders Page# _____

3.5 CENTER FORWARD FACING CREW SEATS

Exception:
Yes_____ No:_____

Two (2) center inboard forward facing crew seats shall be provided. Each seat shall be an H. O. Bostrom Tanker 450 ABTS series fixed SCBA seat and shall have a tapered and padded seat cushion with lumbar support.

Bidders Page# _____

Each seat shall include an SCBA storage area with integral headrest.

Each seat shall be equipped with a red integrated 3-point shoulder harness with lap belt and an automatic retractor built into the seat assembly.

The two (2) center inboard forward facing crew seats shall have a flip-up style seat.

Each center forward facing seat shall include a H. O. BOSTROM Secure All™ SCBA Locking System. The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the tank in-place for a safe and comfortable fit in seat cavity. Fire fighters shall simply push the SCBA unit against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

Exception:
Yes_____ No:_____

Bidders Page# _____

The standard release handle shall be integrated into the seat cushion for quick and easy release and shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

There shall be 6” clearance between these seats to ease maneuverability for occupants. Spacing between seats will be discussed at pre-construction conference.

Bidder is requested to provide model and price option for all cab seats that they may have available to install on this vehicle. Please include price option for each model along with model display information.

3.6 FORWARD FACING CREW SEAT RISER

Exception:
Yes_____ No:_____

Bidders Page# _____

The center forward facing seats shall be mounted on a aluminum riser that shall be mounted in the center of the cab. The riser shall match the interior of the cab and shall have individual, painted compartment doors with latches to provide additional storage space in the cab.

3.7 SEAT UPHOLSTERY MATERIAL

Exception:
Yes_____ No:_____

Bidders Page# _____

The seats shall be upholstered with heavy duty gray tweed Durawear material as provided by Bostrom.

3.8 SEAT BELT CUSHION SENSORS AND BELT SENSORS

Exception:
Yes_____ No:_____

Bidders Page# _____

The apparatus shall be equipped with an Akron/Weldon seat belt warning system. The system shall consist of a Seat Belt module, dash mounted display and an audible alarm.

Seat belt and seat cushion sensors shall be provided on the four (4) specified seating positions.

3.9 VEHICLE DATA RECORDER

Exception:
Yes_____ No:_____

Bidders Page# _____

An Akron/Weldon Vehicle Data Recorder (VDR) system shall be provided. The system shall include an NFPA compliant "Black Box" with reporting software that shall be capable of data storage to coincide with the NFPA requirements.

Data storage capabilities shall include interfaces with the following systems:

- Display module (Master Optical Warning Device)
- VDR, date & time stamp
- Max Vehicle speed (MPH)
- Vehicle acceleration / deceleration (MPH/Sec.)
- Engine Speed (RPM)
- ABS event
- Data password protected
- Data sampled once per second, in 48-hour loop
- Data sampled min by min for 100 engine hours
- Throttle position (% of Throttle)
- Data software
- PC / Mac Compatible
- Data summary reports.

A Weldon model #0L40-2597-00 VDR download harness shall be supplied with the system to allow the data to be downloaded to a computer.

3.10 VEHICLE DATA RECORDER DOWNLOAD HARNESS

Exception:
Yes_____ No:_____

A Weldon model #0L40-2597-00 VDR download harness shall be supplied with the system to allow the data to be downloaded to a computer.

Bidders Page# _____

3.11 INTERIOR CAB STORAGE COMPARTMENTS

Exception:
Yes_____ No:_____

A dual storage compartment shall be mounted in the cab in lieu of rearward facing crew seats. Each compartment shall be approximately 46" high x 24" wide x 24 deep. Each door opening shall be approximately 41 7/8 " high x 21" wide. Each compartment shall be constructed of smooth aluminum and shall be equipped with a roll-up door.

Bidders Page# _____

The compartments shall be constructed of aluminum and the exposed area of the compartment inside the cab will be painted to match the interior surface color of the cab. The compartment shall be equipped with a roll-up door.

The EMS compartment shall be equipped with one (1) Amdor LED interior light(s). The lighting shall be wired to automatically activate when the compartment door is open and the master battery switch is in the "on" position.

Fasteners shall be nutsert or ASE fastener attached. Sheet metal or self-tapping screws are unacceptable.

3.12 CAB DOGHOUSE CUP HOLDER

Exception:
Yes_____ No:_____

An aluminum tray shall be made that will attach to the top of the engine dog house. The tray shall be capable of holding two (2) cups and shall also have a compartment to hold pens and miscellaneous items.

Bidders Page# _____

3.13 ANTENNA INSTALLATION

Exception:
Yes_____ No:_____

Four (4) antenna mounting base(s) model #MATM with 17' of coaxial cable shall be provided and installed on the lower cab roof, behind the light bar. **The location of the attached antenna wire(s) shall be determined at the pre-construction conference**.

Bidders Page# _____

One Feeney Wireless antenna to be installed on the cab roof. **The location of the attached antenna wire(s) shall be determined at the pre-construction conference**.

The Fire Department is responsible to have the correct antenna whip installed once the apparatus is delivered.

3.1.1 *** CAB INSTRUMENTATION & CONTROLS *****

3.1.2 DASH & CENTER CONSOLE

Exception:
Yes_____ No:_____

The dash shall be a custom formed, vinyl overlaid aluminum housing to create an ergonomically designed interior that will be user friendly and functional for the driver and officer.

Bidders Page# _____

The instrument cluster shall be centered in front of the driver and all gauges shall be installed in a non-glare, pewter finish panel.

All warning lights and indicators shall be located in either the gauge itself or in the lower center portion. Each gauge shall be equipped with an international symbol that is easily recognizable; denoting the system being monitored .Instrumentation shall be backlit for easy identification when activated.

The transmission gear selector shall be located on the left side of the center dash assembly, toward the driver for easy access.

3.1.3 DRIVER'S DASHBOARD PANEL

Exception:
Yes_____ No:_____

Bidders Page# _____

The main instrument panel shall be centered in front of the driver and shall have a hinged bottom with two ¼ turn latches at the top. The panel shall be made of 1/8" aluminum with an anti-glare, pewter brushed surface and shall contain the primary gauges, an instrument warning light cluster and the ignition and engine start switches.

The lower portion of this panel can be used for the installation of up to five (5) guarded type rocker switches. Examples of the switches that shall be installed in this area are automatic chains, fan clutch over-ride, ATC mud-snow, inter-axle diff lock, electric fuel pump, all-wheel drive, etc.

The main instrument panel shall contain the primary gauges. An ignition and engine start switch shall be located on a panel to the left upper portion of the driver's side dash panel.

Exception:
Yes_____ No:_____

Bidders Page# _____

Each gauge shall have a raised glass lens with a black matte finish trim ring and be backlit by integral white LED's. Each gauge shall also possess an integral red warning light with a pre-programmed warning point. Each gauge warning indicator shall be capable of activating an audible alarm inside the dashboard.

Fasteners shall be nutsert or ASE fastener attached. Sheet metal or self-tapping screws are unacceptable.

The primary gauges shall consist of:

Exception:
Yes_____ No:_____

Bidders Page# _____

- Vehicle speedometer, (0-80 mph)
- Engine tachometer, (0-3000 rpm)
- Engine oil pressure, (0-100 psi); low oil warning
- Engine coolant temperature (100-280 °F); high engine temp warning
- Transmission oil temperature (100-350 °F); high transmission fluid temp warning
- Vehicle battery voltage (9-18 VDC); low voltage warning
- Front air system gauge (0-150 psi); low air pressure warning at 65 psi
- Rear air system gauge (0-150 psi); low oil pressure warning at 65 psi
- Fuel level (E - 1/2 - F); low fuel level warning
- Air cleaner restriction gauge (0-40), warning at 25"

Additional auxiliary control switches and instruments (if applicable) shall be located within the dash panel and overhead panel located near the driver's position.

- Diesel Exhaust Fluid level (E-1/2-F); low fuel level warning @ 1/8 tank
- Allison Output Retarder

3.1.4 WELDON V-MUX DISPLAY

Exception:
Yes_____ No:_____

Bidders Page# _____

A Vista IV, touch display screen with external buttons, shall be provided between the driver and officer for the electrical V-MUX multiplex system. The exact location shall be determined by the totality of instruments and switches on the cab dash. The display shall be in easy reach of the officer to view information.

3.1.5 INDICATOR CLUSTER

Exception:
Yes_____ No:_____

Bidders Page# _____

The driver's dashboard panel shall consist of Ametek gauges, an 18 item instrument warning light cluster and a 16 item, dead front type alarm panel.

This display shall contain the system control unit that collects data from the vehicle data bus (J1939), analog sensors, and switches throughout the vehicle. This data shall be presented using gauges, telltales and the two (2) display panels. The warning light display shall include a 2 x 20 dot matrix display, 18 telltales and 2 buttons to navigate through the screen menus.

The LCD dot matrix display shall be a 2 line by 20-character display with each character being 7 dot by 5 dot configuration. FSTN technology shall be used on the display for wide viewing capability. The module shall be backlit with amber LED's. The unit shall also be supplied with a heater to ensure proper operation over the entire 40 to +85 deg. C.

This display contains a series of two (2) screens to provide information about the vehicle. To control the display of that information, the screens are divided into two (2) menus; one that can be displayed while the vehicle is in motion and one that can only be accessed when the parking brake is set.

On the Road displays include:

- Two (2) configurable displays that can show any of the parameters the unit collects. This includes odometer, trip information, fuel economy information; all gauge data, and virtually any other data available on the vehicle that the display has access to, either through the data bus or via analog inputs.
- Two (2) trip displays for miles and hours that are capable of being reset.

- Two (2) fuel data screens: shall be provided; one for fuel remaining until empty and one for fuel economy. The fuel economy display shall be capable of being reset so that average economy over a predetermined period can be displayed.

The displays that can be accessed when the parking brake is set include:

- Engine hours as maintained by the engine ECU
- Service Alarm screens to report miles to next service or miles past required service. These screens shall allow the operator to choose the length of the service interval and shall have the ability to reset it.
- Message screens with warning messages the display has collected during the current ignition cycle. These screens shall be divided into configured warnings such as “Low Air Pressure” and the data bus faults reported by ECU's on the vehicle. Both lists shall allow the operator to review the last 12 events that occurred on the vehicle for maintenance and troubleshooting purposes.
- Diagnostic screens shall test the instrumentation system to verify it is working correctly.
- Setup screens shall be used to select either English or metric display. They shall also allow the operator to choose the data that shall be displayed by the configurable on-the-road screens.

The system shall be configured with user defined warning messages such as Low Air Pressure or High Coolant Temperature. When these events occur the warning message shall come up on the screen and can be accompanied by a buzzer. The messages shall be prioritized so the most important messages are always displayed. Whether the message can be dismissed by pressing a button shall be configurable. Messages that have been dismissed but are still active shall be retained in the message screens for review until the ignition is turned off. Listed below are the defined telltales and their indicators.

Exception:
Yes_____ No:_____

Bidders Page# _____

- "Right And Left Directional" arrows (green in color)
- "Ignition ON" Indicator (amber in color)
- "Hi Beam" indicator (blue in color)
- "Battery ON" indicator (green in color)
- "Parking Brake ON" indicator (red in color)
- "Check Transmission" indicator (amber in color)
- "Cab Not Latched" indicator (red in color)
- "Stop Engine" indicator (red in color)
- "Check Engine" indicator (amber in color)
- "ABS Warning" indicator (red in color)
- "Low Coolant Level" (red in color)
- "Fuel Restriction" indicator (amber in color)
- "Water In Fuel" indicator (amber in color)
- "Fasten Seat Belts" indicator (red in color)
- "Fast Idle" Indicator (amber in color)
- "Do Not Move Truck" indicator (red in color)
- "DPF Regeneration" (amber in color)
- "Exhaust High Temperature" (amber in color)
- "Engine Diagnostic Fault" (amber in color)
- "Retarder On" (green in color)

Listed below are indicators that may be included, depending upon the vehicle configuration:

- "Wait To Start" indicator (amber in color)
- "Exhaust System Fault" (amber in color)
- "Topps System Fault" (amber in color)
- "Lube System Active" (amber in color)
- "Jacks Not Stowed" (red in color)
- "PTO Engaged" (green in color)
- "Inter Axle Lock" (amber in color)
- "4x4" (green in color)
- "Driver Controlled Diff Lock" (green in color)
- "Ok to Pump" (green in color)
- "Auto Traction Control" (amber in color)
- "Retarder Active" (amber in color)
- "Auxiliary Brake Active" (amber in color).
- "ATC Disabled" indicator (red in color)
- "ATC Active" indicator (yellow in color)
- "Block Heater On" indicator (yellow in color)

3.1.6 LOWER RIGHT AUXILIARY SWITCH PANEL

Exception:
Yes_____ No:_____

Bidders Page# _____

The driver's lower right panel shall be capable of housing five (5) guarded type rocker switches. Examples of the switches that shall be installed in this area are automatic chains, fan clutch over-ride, ATC, inter-axle diff lock, electric fuel pump, all wheel drive, etc.

Fasteners shall be nutsert or ASE fastener attached. Sheet metal or self-tapping screws are unacceptable.

3.1.7 PUMP SHIFT CONTROL

Exception:
Yes_____ No:_____

Bidders Page# _____

The pump shift control and pump engaged indicator light shall be mounted in the driver's lower left panel. This control shall be equipped with a mechanical type lock to prevent inadvertent activation or de-activation. The lever positions and indicator light shall be clearly marked.

3.1.8 MOBILE TERMINAL AREA

Exception:
Yes_____ No:_____

Bidders Page# _____

There shall be a flat surface area in front of the officer for placement of a laptop computer or Tablet.

3.1.9 CENTER OVERHEAD PANEL

Exception:
Yes_____ No:_____

Bidders Page# _____

An overhead console with a removable pewter panel shall be provided on the cab interior overhead between the driver and officer to permit installation of cab stereo, intercom systems, arrow stick controls, etc. The overhead console shall be approximately 27" wide x 4" high x 13" deep and shall be integrated into the ABS overhead center panel. The overhead console shall not obstruct the driver's vision through the officer's side window.

Fasteners shall be nutsert or ASE fastener attached. Sheet metal or self-tapping screws are unacceptable.

Exception:
Yes_____ No:_____

Bidders Page# _____

3.1.10 CLIMATE CONTROL SYSTEM

A climate-control system shall be provided for total cab environmental comfort. This system shall provide heat, cooling and defrost capabilities to various areas in the cab. The system shall consist of a single evaporator unit, mounted in the center overhead of the cab.

The ceiling mounted evaporator/heater unit shall include the following:

- Heavy-duty, high output blower.
- High efficiency coil that includes "rifled" tubing and oversized header tubes for maximum refrigerant distribution.
- Four (4) 3" diameter, adjustable louvers; two (2) each side of the cab overhead, facing the driver and officer seat positions.
- Two (2) larger louvers located in the center of the overhead assembly, facing the windshield.
- A large center mounted multi-vent defroster louver positioned above the windshield to provide adequate airflow for windshield defrost.

- Defroster vents to be located at bottom of windshield and shall be capable of defrosting the entire windshield.
- Four (4) integral 3" diameter louvers, one (1) below the driver and officer seat positions and one (1) under each outboard rear facing crew seat.
- Damper controls shall be pneumatically operated to provide air discharge to the windshield, front overhead air discharge louvers or the seat riser/floor outlets as required.
- An adjustable electric water valve to control the amount of heat.
- Housing shall be fully insulated and enclosed.
- BTU: 71,000 A/C
- BTU: 85,000 Heat
- CFM: 680 Heat as mounted in the cab
- CFM: 680 A/C as mounted in the cab

The ceiling mounted evaporator unit shall be designed to include a deep well condensate collection pan, which shall include an automatic air vacuum pump to ensure proper drainage.

The ceiling mounted evaporator unit shall be enclosed with an ergonomically designed, custom padded ABS panel to provide maximum headroom and a pleasing appearance.

A serviceable foam intake filter shall be installed on the rear of the evaporator.

The controls panel shall actuate the air-distribution system with air cylinders, which are to be separated from the brake system by an 85-90 psi pressure protection valve.

All defrost/heating systems will be plumbed with one (1) seasonal shut-off valve mounted near the engine.

3.1.11 ROOF MOUNT CONDENSER

Exception
Yes_____ No:_____

Bidders Page# _____

A 12-volt roof top dual condenser shall be strategically positioned on the cab roof so as not to interfere with any emergency lighting systems. The condenser shall be designed with high performance, long life fan assemblies. The fan motors are to be equipped with sealed housings and shaft.

The condenser and coil design shall include rifled tubing for maximum efficiency. Each coil shall be painted black. The condenser unit must include a receiver drier with a high and low pressure switch. The wire harness shall include necessary wiring for the clutch circuit as well as a separate power relay circuit.

Mounting design shall enable easy servicing of all components and unit replacement if necessary.

Condenser shall be a Red Dot Model 4500

3.1.12 CLIMATE CONTROL SWITCHES

Exception:
Yes_____ No:_____

Bidders Page# _____

The driver's overhead panel shall contain all controls for the cab climate control system. The following controls shall be provided: mode selector switch, front fan speed switch, rear fan speed switch, air conditioning on/off switch, and temperature control dial.

Exception:
All controls shall be clearly labeled, adequately backlit, and installed in an easily removable panel.

3.1.13 AUXILIARY HEATERS UNDER REAR FACING OUTER SEAT RISERS

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) 15,000 BTU Red Dot R-270 auxiliary heaters shall be provided, located one (1) under each rear facing outboard seat riser. Heater controls for each shall be provided.

3.1.14 CAB DEFOGGER FANS

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2), six (6) inch diameter, two-speed, defogger fans shall be provided in addition to the standard windshield defroster.

3.1.15 CAB TILT ASSEMBLY

Exception:
Yes_____ No:_____

Bidders Page# _____

A hydraulic cab lift system shall be provided, consisting of an electric-powered hydraulic pump, fluid reservoir, dual lift cylinders, remote cab lift controls and all necessary hoses and valves.

The cab tilt mechanism shall be custom designed for ease of maintenance and consist of two (2) hydraulic cylinders with a maximum lift capacity of 19,625 pounds. Hydraulic lines shall be rated at 20,000 PSI burst pressure. The hydraulic cylinders shall be

equipped with a velocity fuse that protects the cab from accidentally descending when the cab is in the tilt position.

Hydraulic cylinders shall be detachable to allow removal of the engine for major service. A remote cable operated mechanical cylinder stay bar and release shall be provided to insure a positive lock in the tilted position.

The two (2) rear outboard cab latches shall be of the hydraulic pressure release, automatic re-latching type, and provide an automatic positive lock when the cab is lowered. The latch shall not disengage or experience any damage when subjected to a pull apart tensile load of 6,000 lbs. The hydraulic pressure required to unlock the latch shall not exceed 550 PSI. The latch shall withstand 5,000 PSI without leaks or damage and withstand 1,000 continuous cycles of operation under a load of 1,000 lbs at liftoff. The tilt pump shall be electric over hydraulic type, with a pressure rating of not less than 4,000 PSI.
Additionally, the cab tilt device shall be both electrically and hydraulically interlocked to prevent inadvertent activation of the cab tilt system.

- A "CAB NOT LATCHED" indicator shall be provided in the cab dash-warning cluster.
- A dual switch control system shall be provided for the cab tilt, located on the passenger side of the vehicle or on the optional tether control. System shall consist of a three (3) position toggle switch along with a rubber covered push button switch.

3.1.16 AUXILIARY MANUAL CAB LIFT

Exception:
Yes_____ No:_____

Bidders Page# _____

An auxiliary manual cab lift backup system shall be furnished inside the passenger side of the pump enclosure for use in the event of total electrical shutdown.

The cab tilt control shall be equipped with an interlock that shall disable the cab tilt system in the event the parking brake is not applied.

3.1.17 CHASSIS FRAME ASSEMBLY

Exception:
Yes_____ No:_____

Bidders Page# _____

The chassis frame shall be fabricated in its entirety at the manufacturer's facility. This shall prevent any split responsibility in warranty or service.

The frame shall consist of two (2) channels fastened together by cross members. All structural fasteners used in the frame shall be Grade 8 hardware. Hardened steel washers shall be used under all bolt heads and nuts to avoid stress concentrations. Top flange shall be free of bolt heads. All spring hangers shall be machined steel castings. Weldment type chassis and the use of Huck bolts shall never be used.

Each main frame rail shall be 10-1/4" x 4" x 3/8", fabricated from 110,000 PSI minimum yield steel, with a minimum section modulus of 18.396 cu in and a resisting bending moment (RBM) of 2,023,560 inch pounds.

A full length inner frame liner 9.44" X 3.63" X 3/8" shall be installed. Total section modulus of each rail, with liner, shall be 33.56 cu in and the total resisting bending moment (RBM) shall be a minimum of 3,691,050 in-lbs, per rail.

The chassis frame assembly, consisting of frame rails, cross members, axles and steering gear(s), shall be finish painted before installation of any electrical wiring, fuel system components, or air system components. All components or brackets fastened to the frame rails shall be cleaned, primed and painted prior to being attached to the frame rails.

Exception:
Yes_____ No:_____

4.0 * FRONT BUMPER, EXTENSION & ACCESSORIES *****

4.1 FRONT BUMPER

Bidders Page# _____

A 12" high, 101" wide, two (2) ribbed, bright finish stainless steel front bumper shall be provided. The bumper shall be a wrapped design to match the contour of the front cab sheet.

4.2 BUMPER EXTENSION

Exception:
Yes_____ No:_____

The bumper shall be extended 20" with a polished aluminum tread plate gravel shield enclosing the top and ends.

Bidders Page# _____

The polished aluminum tread plate gravel shield shall terminate under the top bumper flange.

The bumper shall be reinforced with a 1/4" X 9" steel channel. The reinforcement shall be attached between the bumper and the chassis frame rails.

4.3 STORAGE WELL – CENTER of Bumper Extension

Exception:
Yes_____ No:_____

One (1) storage well, constructed of 1/8" aluminum, shall be installed in the gravel shield. This storage well shall be center mounted between the chassis frame rails. The bottom of the storage well shall have a minimum of four (4) drain holes.

Bidders Page# _____

The center front bumper hose well shall be furnished with Velcro straps to secure the hose stored in the well. The straps shall be attached to each side of the hose well with stainless steel footman loops.

4.5 SWIVEL STOPS

Exception:
Yes_____ No:_____

Installed on the front bumper extension shall be stainless steel rods to limit the travel of the front inlet/outlet swivel. Two- (2) stainless steel rods shall be threaded into the bumper deck.

Bidders Page# _____

4.6 FRONT TOW HOOKS

Exception:
Yes_____ No:_____

Two (2) chrome plated tow hooks shall be provided, mounted below the front bumper attached directly to the frame. The tow hooks shall be fastened with grade 8 bolts and nuts.

Bidders Page# _____

4.7 FRONT AXLE - INDEPENDENT FRONT SUSPENSION

Exception:
Yes_____ No:_____

A Reyco independent front suspension shall be provided with a rating of 21 - 24,000 lbs. Reyco 20,000lb axle will be used with Meritor ADD 22X, 17” brakes using pads and rotors

Bidders Page# _____

both on the front and rear axles. This will allow the purchaser to control their inventory and limit the amount of parts. This axle/suspension configuration shall consist of the following and can only be rated at 20,000lbs according to DOT Regulations:

- High Durability hubs
- Outboard full air 17" disk brakes
- Bilstein 60mm heavy duty shock absorbers
- Air ride springs with dual leveling valves
- FL wheel end components
- Anti-lock braking system capability

This system isolates road forces, ensuring maximum load stability and driver comfort. The exceptionally long wheel travel, low natural frequency and independent suspension travel, provide outstanding vehicle ride and handling performance, stability and safety for on-highway and on difficult to access terrains.

Exception:
Yes_____ No:_____

4.8 REAR AXLE

Bidders Page# _____

Rear axle shall be a single, Meritor RS-24-160 with a capacity of 24,000 lbs. (Minimum). Axle shall be a single reduction type and have a gear ratio as required. Oil seals shall be provided as standard equipment.

Exception:
Yes_____ No:_____

4.9 REAR BRAKES

Bidders Page# _____

Meritor ADD 22X, 17" disc brakes shall be provided for the rear axle. The rear brakes will be full air actuated with automatic slack adjustment.

Exception:
Yes_____ No:_____

4.10 REAR AXLE TOP SPEED

Bidders Page# _____

The rear axle/s shall be geared for a vehicle top speed in accordance with NFPA sections 4.15.2 and 4.15.3.

Units with GVWR over 26,000 pounds shall be limited to 68 mph. If the combined tank capacity is over 1250 gallons of foam and water or the GVWR is over 50,000 pounds, the vehicle top speed shall be limited to 60 mph or the fire service rating of the tires, whichever is lower.

Exception:
Yes_____ No:_____

4.11 TIRE CHAINS

Bidders Page# _____

The vehicles rear drive axle shall be equipped with a Rotogrip # 68764-18 tire chain system. The system shall utilize the existing vehicle air compressor system. A switch shall be provided in the drivers console area to control the activation of the chains. The switch shall have a safety feature, which does not allow for inadvertent activation.

Exception:
Yes_____ No:_____

4.12 REAR SUSPENSION

Bidders Page# _____

A Hendrickson "FIREMAAX" model #FMX-242 air ride suspension shall be provided for the single rear axle. The suspension shall have a weight rating equal to the rear axle weight rating up to 24,000 pounds.

5.0 ***** AIR & BRAKE SYSTEM *****

5.1 BRAKE SYSTEM

Exception:
Yes_____ No:_____

Bidders Page# _____

A dual circuit, air operated braking system, meeting the design and performance requirements of FMVSS -121 and the operating test requirements of NFPA 1901 current edition shall be installed. It shall be direct air type with dual air treadle in the cab. The system shall be powered by an engine mounted, gear driven air compressor protected by a heated air dryer.

The air system shall be plumbed with reinforced, air brake tubing/hose in conformance to SAE J 844-94, Type B and U.S.D.O.T. standards. The compressor discharge shall be plumbed with stainless steel braided hose lines with a Teflon lining. Eaton Synflex Eclipse Air Brake tubing shall be run along the inside frame rails and connected with push to connect type fittings that meet or exceed all industry standards. All Synflex tubing shall be secured with non-conductive, corrosion resistant strapping mounted with standoff fasteners. Cord reinforced rubber hose lines with brass fittings shall be installed from the frame rails to axle mounted air connections.

The air system shall provide a rapid air build-up feature and low-pressure protection valve with light and buzzer, designed to meet the requirements of NFPA 1901, current edition.

5.2 ABS SYSTEM

Exception:
Yes_____ No:_____

Bidders Page# _____

An Anti-Skid Braking System (ABS) shall be provided to improve braking control and reduce stopping distance. This braking system shall be fitted to all of the axles. All electrical connections shall be environmentally sealed, water, weatherproof, and vibration resistant.

The system shall constantly monitor wheel behavior during braking. Sensors on each wheel shall transmit wheel speed data to an electronic processor which shall sense approaching wheel lock causing instant brake pressure modulation up to 5 times per second in order to prevent wheel lockup. Each wheel shall be individually controlled.

To improve service trouble shooting, provisions in the system for an optional diagnostic tester shall be provided. The system shall test itself each time the vehicle is started. A dash-mounted light shall go out once the vehicle has attained 4 mph after successful ABS start-up. To improve field performance; the system shall be equipped with a dual circuit design. The system circuits shall be configured in a diagonal pattern. Should a malfunction occur, the defective circuit shall revert to normal braking action. A warning light shall signal malfunction to the operator. The system shall consist of a wheel mounted toothed ring, sensor, sensor clip, electronic control unit and solenoid control valve.

The sensor clip shall hold the sensor in close proximity to the toothed ring. An inductive sensor consisting of a permanent magnet with a round pole pin and coil shall produce an alternating current with a frequency proportional to wheel speed. The unit shall be sealed, corrosion resistant and protected from electromagnetic interference. The electronic control unit shall monitor the speed of each wheel. A deviation shall be corrected by cyclical brake application and release. If a malfunction occurs, the defective circuit shall signal the operator and the malfunctioning portion of the system shall shut down.

The system shall be installed in a diagonal pattern for side-to-side control. The system shall insure that each wheel is braking to optimum efficiency up to 5 times a second.

The system shall also control application of the auxiliary engine exhaust or drive line brakes to prevent wheel lock.

This system shall have a three (3) year or 300,000 mile parts and labor warranty as provided by Meritor Wabco Vehicle Control Systems.

Exception:
Yes_____ No:_____

Bidders Page# _____

5.3 ELECTRONIC STABILITY CONTROL (ESC)

An Electronic Stability Control (4 or 6 Channel) shall be provided as part of the Standard ABS system. The Electronic Stability Control system is capable of recognizing and assisting in both rollover and vehicle-under and over-steer situations through advanced monitoring of vehicle parameters and automatic and selective application of the chassis brakes. The Electronic Stability system uses lateral and yaw accelerometers, wheel speed sensors, ABS pressure modulator valves and an ECU to control the four corners of a vehicle. The controller monitors the vehicle response to turning and braking and adjusts or modulates the brake pressure at the wheel end to slow the vehicle in roll control, stabilize the vehicle when under or over steering, and modulate brake pressure when excessive wheel slip, or wheel lockup is detected. By these actions, the ESC system helps to maintain the vehicle's lateral and roll stability at all times, and improves braking and steer ability during heavy brake applications and during braking on slippery surfaces.

Exception:
Yes_____ No:_____

Bidders Page# _____

5.4 AUTOMATIC TRACTION CONTROL (ATC)

To further improve vehicle drive characteristics, the unit shall be fitted with automatic traction control (ATC). This system shall control drive wheel slip during acceleration from a resting point. An extra solenoid valve shall be added to the ABS system. The system shall control the engine and brakes to ensure efficient acceleration. The system shall be equipped with a dash-mounted light that shall come on when ATC is controlling drive wheel slip. The system shall also include an "off road traction" dash mounted switch that will allow the operator to momentarily allow for more wheel slip when the unit is in deep mud or snow.

This system shall have a three (3) year or 300,000 mile parts and labor warranty as provided by Meritor Wabco Vehicle Control Systems.

Exception:
Yes_____ No:_____

Bidders Page# _____

5.5 BRAKE AIR RESERVOIRS

There shall be a minimum of three (3) air reservoirs installed in conformance with best automotive practices. Reservoir capacity total shall be a minimum of 4700 cubic inches.

The air reservoirs shall be color coded to match the air lines for easy identification, ease of maintenance and troubleshooting. The reservoirs shall be painted the following colors:

- Wet Tank Black
- Primary Tank Green

- Secondary Tank Blue
- Auxiliary Tank(s) Yellow

For ease of daily maintenance, each air system reservoir shall be equipped with a brass 1/4 turn drain valve.

A Rockwell/Wabco System Saver 1200 heated air dryer shall be furnished. An automatic moisture ejector on the primary or wet tank shall also be furnished

5.6 AIR LINES

Exception:
Yes_____ No:_____

Bidders Page# _____

The entire chassis air system shall be plumbed utilizing reinforced, Synflex air lines. All of the airlines shall be color coded to correspond with an air system schematic and shall be adequately protected from heat and chafing.

5.7 AIR COMPRESSOR

Exception:
Yes_____ No:_____

Bidders Page# _____

Air compressor shall be a Wabco brand, minimum of 18.7 cubic feet per minute capacity. Air brake system shall be the quick build up type. The air compressor discharge line shall be stainless steel braid reinforced Teflon hose. Note; is there options for the engine mounted air compressor as we would prefer a Bendix Tru-Flo compressor.

A pressure protection valve shall be installed to prevent the use of air horns or other air operated devices should the air system pressure drop below 80 psi (552 kPa).

The chassis air system shall meet NFPA 1901, latest edition for rapid air pressure build-up within sixty (60) seconds from a completely discharged air system. This system shall provide sufficient air pressure so that the apparatus has no brake drag and is able to stop under the intended operating conditions following the sixty (60) seconds build-up time.

5.8 BRAKE TREADLE VALVE

Exception:
Yes_____ No:_____

Bidders Page# _____

A Bendix dual brake treadle valve shall be mounted on the floor in front of the driver. The brake control shall be positioned to provide unobstructed access and comfort for the driver.

5.9 PARKING BRAKE

Exception:
Yes_____ No:_____

Bidders Page# _____

Parking brake shall be of the spring-actuated type, mounted on the rear axle brake chambers. The parking brake control shall be mounted on the cab center instrument panel. A red indicator light shall be provided in the driver dash panel that shall illuminate when the parking brake is applied.

The parking brake shall be plumbed to provide all wheel lock-up when applied (Front and Rear). When the park brake is engaged and released there shall not be any delay on activation and deactivation for both the front and rear axle brake systems.

5.10 FRONT WHEELS & TIRES

Exception:
Yes_____ No:_____

Bidders Page# _____

The front wheels shall be 22.5" x 13" ten stud, hub piloted polished aluminum disc type.

The aluminum disc front wheels shall be provided with bright nut covers and hub caps and shall be manufactured by Real Wheel.

The front tires shall be Michelin 425/65R22.5 "20 Ply" tubeless radial XZY3 wide base mixed tread. The tires shall be fire service rated up to 24,400 lbs and shall have a top speed of 68 mph when inflated to 120 psi.

Fire Service Rating means operations not to exceed one hour loaded travel at maximum speed, with at least a one hour cool down prior to another loaded run.

Industry load and inflation standards are in a constant state of change. Printed material may not reflect the latest load and inflation standards.

NOTE: NEVER EXCEED THE MAXIMUM AIR PRESSURE LIMITATION.

5.11 REAR WHEELS & TIRES

Exception:
Yes_____ No:_____

Bidders Page# _____

The single rear axle wheels shall be 22.5" x 8.25" ten stud, hub piloted disc type. The inner wheels shall be painted steel, the outer wheels shall be polished aluminum.

The single rear axle aluminum disc wheels shall be provided with bright nut covers and hub caps. Manufacture shall be from real wheel and model high hat.

The rear tires shall be Michelin 12R22.5 "16 Ply" tubeless radial XDN2 traction tread. The tires shall be fire service rated up to 28,880 lbs and shall have a top speed of 75 mph when inflated to 120 psi.

Fire Service Rating means operations not to exceed one hour loaded travel at maximum speed, with at least a one hour cool down prior to another loaded run.

Industry load and inflation standards are in a constant state of change. Printed material may not reflect the latest load and inflation standards.

NOTE: NEVER EXCEED THE MAXIMUM AIR PRESSURE LIMITATION.

5.12 TIRE PRESSURE MONITORING DEVICES

Exception:
Yes_____ No:_____

Bidders Page# _____

Each tire shall be equipped with an LED tire alert pressure management system (Reel Wheel Tire Watch, LED TPMS) that shall monitor tire pressure. A chrome plated brass sensor shall be provided on the valve stem of each tire.

The sensor shall calibrate to the tire pressure when installed on the valve stem for pressures between 20 and 120 psi. The sensor shall activate an integral battery operated LED when the pressure of that tire drops 8 psi.

Removing the cap from the sensor shall indicate the functionality of the sensor and battery. If the sensor and battery are in working condition, the LED shall immediately start blinking.

6.0 *** ENGINE, TRANSMISSION & ACCESSORIES ******* Exception:

6.1 ENGINE Yes_____ No:_____

Bidders Page# _____

Engine shall be a Cummins, Model ISX12 500, diesel, turbo-charged, per the following specifications.

- Max. Horsepower 500 HP @ 1800 RPM
- Governed Speed 2100 RPM
- Peak Torque 1645 lb. ft. @ 1100 RPM
- Cylinders Six (6)
- Operating Cycles Four (4)
- Bore & Stroke 5.11 x 5.91 in.
- Displacement 729 cu. in.
- Compression Ratio 16.6:1
- Governor Type Limiting Speed
- Drive line Size 1810 Series.

Engine oil filters shall be engine manufacturers branded or approved equal. Engine oil filters shall be accessible for ease of service and replacement.

A fuel/water separator shall be provided.

6.2 ENGINE CHASSIS CERTIFICATION Exception:
Yes_____ No:_____

Bidders Page# _____

The engine shall be installed in accordance with engine manufacturer's instructions. The manufacture shall be able to furnish proof of engine installation approval by the engine manufacturer.

6.3 COOLING/RADIATOR Exception:
Yes_____ No:_____

Bidders Page# _____

Radiator shall be brass with bolted steel top and bottom tanks. The cooling system shall be designed for a maximum of fifteen (15) PSI operation. There shall be a sight glass in the radiator to check the coolant level without removing the radiator cap. The core construction shall be tube and fin with three (3) tube rows, 273 total core tubes, and fourteen (14) fins per inch.

Extended life engine coolant shall provide anti-freeze protection to -30° F. The mixture shall be per the engine manufacture's specifications. Coolant provided to be Castrol ELC with SCA

Core area shall be a minimum of 1375 square inches (39 H x 35.25W).

The engine cooling system shall have an inline coolant filter that shall have a shut off valve for ease of maintenance. Filter to be remote mounted and location to be determined at Pre-Construction Conference.

The engine cooling system shall be certified by the engine manufacturer to meet cooling index requirements for a minimum ambient temperature or 110-degrees Fahrenheit.
Radiator to have a 5 year extended warranty.

A coolant filter shall be provide with an element that does not have an additive since ELC Coolant is specified

6.4 TRANSMISSION COOLER

Exception:
Yes_____ No:_____

Bidders Page# _____

A shell and tube transmission oil cooler shall be provided using engine coolant to control the transmission oil temperature. The cooler shall have an aluminum shell and copper tubes. The cooler shall be assembled using pressed in rubber tube sheets to mechanically create a reliable seal between the coolant and the oil. No brazed, soldered, or welded connections shall be used to separate the coolant from the oil.

6.5 RADIATOR SKID PLATE

Exception:
Yes_____ No:_____

Bidders Page# _____

The radiator installation shall include a heavy-duty radiator skid plate to protect the radiator from debris or obstructions under the chassis. The skid plate shall be designed so the angle of approach is not effected.

6.6 CHARGE AIR COOLER

The charge air cooler shall be constructed of aluminum with cast aluminum side tanks. The cooler shall have a frontal core size of 957 square inches, seven (7) fins per inch, and forty eight (48) core tubes.

The charge air cooler shall be mounted directly ahead of the radiator and to the radiator headers. Rubber isolators shall be used at the mounting points to reduce transmission of vibrations.

Where applicable, the charge air cooler pipes shall be constructed of appropriately sized aluminized steel tubing with 0.06" wall thickness and formed hose barbs. The connections between these pipes, the engine and charged air cooler, shall be made using high temperature silicone hoses rated for use in temperature up to 500°F, and heavy duty constant tension T-Bolt spring hose clamps. These connections shall adequately allow for movement of the engine relative to the charged air cooler.

6.7 COOLING SYSTEM FAN

Exception:
Yes_____ No:_____

Bidders Page# _____

The engine cooling system shall incorporate a heavy duty fan, installed on the engine and include a shroud.

The fan shall be equipped with an air operated clutch fan, which shall activate at a pre-determined temperature range.

Recirculation shields shall be installed to ensure that air which has passed through the radiator is not drawn through it again.

There shall be a driver controlled manual fan switch to enable the driver to manually activate the fan.

There shall be an interlock to engage fan when unit is in pump gear.

Exception:
Yes_____ No:_____

6.8 COOLANT HOSE AND PIPING

Bidders Page# _____

All coolant piping shall be constructed of appropriately sized powder coated steel tubing with 0.06" wall thickness and formed hose barbs. All connections between coolant pipes and chassis components shall be made using appropriately sized silicone hoses or elbows, rated for use in temperatures ranging from -60°F to +350°F, and appropriately sized constant torque hose clamps. These connections shall be minimal in number to reduce the number potential leak points, and shall adequately allow for movement of the engine relative to chassis mounted components. All integral hoses supplied with the engine shall be as supplied by the engine manufacturer.

Exception:
Yes_____ No:_____

6.9 HEATER HOSES

Bidders Page# _____

Due to out gassing, heavy duty rubber Goodyear "Hi Miler" heater hoses or equivalent shall be furnished for the heater system within the interior structure of the cab. All heater hoses shall be equipped with constant torque type hose clamps. All integral hoses supplied with the engine shall be as supplied by the engine manufacturer.

Exception:
Yes_____ No:_____

6.10 LOW COOLANT INDICATOR LIGHT AND ALARM

Bidders Page# _____

A low engine coolant indicator light located in the dash instrument panel shall be provided. An audible alarm shall be provided to warn of the low coolant condition.

Exception:
Yes_____ No:_____

6.11 ENGINE FAST IDLE

Bidders Page# _____

A fast idle for the electronic controlled engine shall be provided. The fast idle shall be controlled by switches located on the smart wheel.

An electronic interlock system shall prevent the fast idle from operating unless the transmission is in "Neutral" and the parking brake is fully engaged. If the fast idle control is used in conjunction with a specified engine/transmission driven component or accessory, the fast idle control shall be properly interlocked with the engagement of the specified component or accessory.

Exception:
Yes_____ No:_____

6.12 AIR CLEANER

Bidders Page# _____

An engine air cleaner shall be provided. The air cleaner shall include a dry type element and shall be installed in accordance with the engine manufacturer's recommendations. The air cleaner shall be located to the rear of the engine, with streamline air pipes and hump hose connections from the inlet to the air cleaner and from the air cleaner to the turbo. The air cleaner shall be easily accessible when the cab is tilted. The air cleaner shall be plumbed to the air intake system that shall include a self-sealing connection between the cab and air cleaner assembly to allow the cab to be tilted.

The air Intake and filter shall be certified by the engine manufacture. There shall be an air filter restriction indicator located on the filter or in the drivers dash gauge. Options to be discussed at Pre-Construction Conference.

Exception:
Yes_____ No:_____

6.13 SPARK ARRESTOR

Bidders Page# _____

A spark arrestor shall be installed in the chassis air intake system. This arrestor shall be mounted behind the intake grille to filter out airborne embers. The spark arrestor housing must be easily accessible when the cab is tilted.

Exception:
Yes_____ No:_____

6.14 ACCELERATOR CONTROL

Bidders Page# _____

A floor mount accelerator pedal shall be installed on the floor in front of the driver. The pedal shall be positioned for comfort with ample space for fire boots and adequate clearance from the brake pedal control.

Exception:
Yes_____ No:_____

6.15 REMOTE THROTTLE CONTROL HARNESS

Bidders Page# _____

An apparatus interface wiring harness for the engine shall be supplied with the chassis. The harness shall include a connector for connection to the chassis harness which shall terminate in the left frame rail behind the cab for reconnection to required throttle control harnesses. The harness shall contain necessary connectors for a pressure governor and a multiplexed gauge. Separate circuits shall be included for pump controls, “Pump Engaged” and “OK to Pump” indicator lights, open compartment ground, start signal, park brake ground, ignition signal, master power, customer ignition, air horn solenoid switch, high idle switch and high idle indication light.

An apparatus interface wiring harness shall also be included which shall be wired to the cab harness interface connectors and shall incorporate circuits with relays to control pump functions. This harness shall control the inputs for the transmission lock up circuits, Governor/hand throttle controls and dash display which shall incorporate “Pump Engaged” and “OK to Pump” indicator lights. The harness shall contain circuits for the apparatus builder to wire in a pump switch.

Exception:
Yes_____ No:_____

6.16 ENGINE PROGRAMMING REMOTE THROTTLE

Bidders Page# _____

The engine ECM (Electronic Control Module) discreet wire remote throttle circuit shall be turned off for use with a J1939 based pump controller or when the discreet wire remote throttle controls are not required.

A KIM "Hotstart" 1000 watt engine heater with thermostat shall be furnished along with a receptacle with hinged cover. Block heater to activate below 80 degrees and shut off at 100 degrees.

6.17 ENGINE Idle Reduction System

Exception:
Yes_____ No:_____

Bidders Page# _____

"Idle reduction system"
A Sysign Engineering Idle reduction system using a Class1 Super node will be installed by the builder with an additional Iota75 amp IQ4 Smart charger that is plugged directly into the generator to work when the generator is running.

7.0 TRANSMISSION

Exception:
Yes_____ No:_____

Bidders Page# _____

An Allison World Transmission, Model 4000PR EVS electronically controlled, automatic transmission shall be provided. Transmission specifications shall be as follows:

- Max. Gross Input Power 600 HP
- Max. Gross Input Torque 1850 lb. ft.
- Input Speed (Range) 1700- 2300 RPM
- Direct Gear (Pumping) 4th (Lock-up)

Transmission installation shall be in accordance with the transmission manufacturer's specification. The transmission shall be readily and easily removable for repairs or replacement.

One (1) PTO opening shall be provided on both the left and right side of the converter housing (positions one (1) o'clock and eight (8) o'clock).

The transmission retarder control shall be (RET3) activated 50% by letting off the accelerator pedal or 100% by applying the brake pedal. A second on/off switch is provided to activate and deactivate the auto apply portion.

The transmission retarder shall have a master "on/off" switch on the instrument panel. An indicator light shall be provided to notify the driver the transmission retarder is activated. Also, a red indicator light shall be provided to warn that the transmission is being overworked.

The retarder shall be wired to the brake lights so they are energized when the retarder is slowing the vehicle down.

The ABS system shall automatically disengage the auxiliary braking device, when required.

The transmission shall be calibrated for five (5) forward gears and one (1) reverse gear. Each gear shall have the following ratios:

- First 3.51:1
- Second 1.91:1
- Third 1.43:1
- Fourth 1.00:1
- Fifth 0.74:1
- Reverse -4.80:1

An illuminated, touch-pad type shift control shall be mounted in the cab, convenient to the driver. Shift control shall be approved by the transmission manufacturer.

7.1 TRANSMISSION OIL LEVEL SENSOR

Exception:
Yes_____ No:_____

Bidders Page# _____

The transmission shall be equipped with the oil level sensor (OLS); this sensor shall allow the operator to obtain an indication of the fluid level from the shift selector. The sensor display shall provide the following checks, correct fluid level, low fluid level and high fluid level.

7.2 PARK TO NEUTRAL

Exception:
Yes_____ No:_____

Bidders Page# _____

The transmission, upon application of the parking brake, shall automatically shift into neutral.

7.3 PRESELECT PROGRAMMING

Exception:
Yes_____ No:_____

Bidders Page# _____

The transmission shall have Allison Preselect enabled to automatically downshift when the secondary transmission retarder is active.

The transmission shall be programmed at the factory to automatically downshift to 4th gear.

This feature shall be enabled/disabled with the main on/off switch for the transmission retarder.

7.4 TRANSMISSION FLUID

Exception:
Yes_____ No:_____

Bidders Page# _____

TES- 295 synthetic transmission fluid shall be utilized to fill the 4000 EVS transmission.

7.5 DRIVE LINES

Exception:
Yes_____ No:_____

Bidders Page# _____

Drive lines shall be Dana (Spicer) 1810 heavy duty series or equal, with "glide coat" splines on all slip shafts. The chassis manufacturer shall utilize an electronic type balancing machine to statically and dynamically balance all drive shafts. The manufacturer shall provide proof of compliance with all drive shaft manufacturer's standards and specifications.

7.6 DIESEL EXHAUST FLUID TANK

Exception:
Yes_____ No:_____

Bidders Page# _____

A five-eight (5-8) gallon diesel exhaust fluid (DEF) tank shall be provided and installed. The tank shall be mounted in the area of the battery box and shall be accessible through a door in the crew area step well.

The tank shall include an internal heater that will be fed by engine coolant directly from the engine block to ensure it is always kept at the proper temperature per EPA requirements. The tank shall include a temperature sensor to control the flow of the engine coolant from the heater valve to the DEF tank.

A DEF fluid level senor shall be provided with the DEF tank and connected to the level gauge on the dashboard.

7.7 EXHAUST SYSTEM

Exception:
Yes_____ No:_____

Bidders Page# _____

The exhaust system shall be installed in accordance with the engine manufacturer's requirements and meet all Environmental Protection Agency and State noise level requirements. Exhaust system components shall be securely mounted and easily removable.

The diesel particulate filter/muffler shall be fabricated from stainless steel and of a size compatible with the engine exhaust discharge.

The exhaust outlet shall be provided to accommodate the use of the departments Plymovent Exhaust retraction system.

Exhaust tubing shall be a minimum of 16 gauge stainless steel from the turbocharger on the engine to the inlet of the diesel particulate filter. Any flexible exhaust tubing shall be HDT stainless steel type. To minimize heat build-up, exhaust tubing within the engine compartment shall be wrapped with an insulating material. Exhaust shall be wrapped from the turbocharger to the entrance of the muffler. Material shall be held in place with worm gear type clamps.

An exhaust diffuser shall be provided to reduce the temperature of the exhaust as it exits the tailpipe.

Separate "regeneration" enable and prohibit switches shall be provided under the dash board on the driver's side. Each switch shall be provided with a spring loaded protective cover and shall be clearly marked as to function.

7.8 SELECTIVE CATALYTIC REDUCTION (SCR)

Exception:
Yes_____ No:_____

Bidders Page# _____

The vehicle shall be equipped with SCR technology that uses a urea based diesel exhaust fluid (DEF) and a catalytic converter to significantly reduce oxides of nitrogen (NOx) emissions.

The SCR system shall reduce levels of NOx (oxides of nitrogen emitted from engines) by injecting small quantities of diesel exhaust fluid (DEF) into the exhaust upstream of a catalyst, where it vaporizes and decomposes to form ammonia and carbon dioxide. The ammonia (NH3), in conjunction to the SCR catalyst, converts the NOx to harmless nitrogen (N2) and water (H2O).

The exhaust tailpipe extending from the SCR catalyst to the side of the vehicle shall be constructed from 16-gauge aluminized steel tubing. The exhaust discharge shall be on the officer side of the apparatus forward of the rear axle.

8.0 **** FUEL SYSTEM ****

8.1 FUEL TANK

Exception:
Yes_____ No:_____

Bidders Page# _____

Fuel tank shall be a minimum of sixty-five (65) gallon capacity. It shall have a minimum fuel filler neck of 2" ID. A 1/2" minimum diameter drain plug shall be provided. The tank shall be fabricated from hot rolled, pickled and oiled steel. Provisions for an additional feed line and fuel level float shall be provided for future use.

The fuel tank shall be installed behind the rear wheels between the frame rails.

The fuel tank shall meet all FHWA 393.67 requirements including a fill capacity of 95% of tank volume.

The fuel tank shall be able to withstand a longitudinal acceleration of -23.0g at 0.166 seconds in accordance to SAE J211 standards using a channel frequency class 600 filter. Testing shall be performed at and verified by a third party testing and evaluation center. Fuel tank to be attached with stainless steel fuel tank straps.

8.2 DIESEL GENERATOR FUEL CONNECTION

Exception:
Yes_____ No:_____

Bidders Page# _____

The diesel generator shall be connected with a separate fuel pump and fuel lines to the chassis fuel tank.

The fuel lines shall be textile reinforced synthetic rubber or plastic hose that is approved for use with diesel fuel and has a minimum max temperature rating of 250° F. The lines shall be sized to meet engine manufacture's requirements, and shall be carefully routed and secured along the inside of the frame rails.

The generator and all connection to the vehicle shall have disconnects to make unit easily removal for service or repairs of Generator.

8.3 FUEL FILTER/WATER SEPARATOR

Exception:
Yes_____ No:_____

Bidders Page# _____

A fuel filter/water separator shall be provided in the fuel system. A "water in fuel" indicator shall be provided on the dash. Fuel Filter to be a Devcon 382, 7 Micron Filter assembly to replace the OEM Filter if approved by the engine manufacture.

8.4 SECONDARY ELECTRIC FUEL PUMP

Exception:
Yes_____ No:_____

Bidders Page# _____

In addition to the primary fuel pump, a secondary electric fuel pump for re-priming shall be furnished in the main fuel line. A labeled control switch shall be provided on the main dash panel.

8.5 FUEL POCKET

Exception:
Yes_____ No:_____

Bidders Page# _____

A fuel fill shall be provided in the left side rear wheel well area. A Cast Products heavy duty cast aluminum spring loaded hinged fill door shall be provided.

A label indicating "Ultra Low Sulfur Diesel Fuel Only" shall be provided adjacent to the fuel fill.

8.6 DUAL POWER STEERING

Exception:
Yes_____ No:_____

Bidders Page# _____

A power steering system shall be provided utilizing a steering gear on the driver side of the chassis and an assist steering gear on the officer side of the chassis.

The power steering gear on the officer side of the chassis will increase performance in turning the officer side wheel assembly, reducing loads and forces on the main gear and components.

The steering system will be designed to maximize the turning capabilities of the front axle no matter the rating and tire size. The use of a power assist cylinder on the officer side of the chassis is NOT ACCEPTABLE on front axles of this capacity.

The system will be designed utilizing an engine driven hydraulic pump, with a maximum operating pressure of 2000 PSI. Steering design will permit a maximum of 5.6 turns from stop to stop. Steering system components shall be mounted in accordance with the steering gear manufacturer's instructions.

8.7 STEERING COLUMN

Exception:
Yes_____ No:_____

Bidders Page# _____

The steering column shall be a “Douglas Autotech” tilt and telescope column. A lever mounted on the side of the column shall control the tilt and telescope features.

The steering shaft from the column to the miter box shall have a rubber boot to cover the shaft slip and a second rubber boot to seal the passage hole in the floor.

There shall be an ergonomically designed, self-canceling lever that shall control the following functions:

- Left and right turn signals
- High beam activation
- Hazard warning switch
- Two speed with intermittent windshield wiper control
- Windshield washer control

8.8 SMARTWHEEL STEERING WHEEL

Exception:
Yes_____ No:_____

Bidders Page# _____

The steering column shall be a "Smart Wheel" multiplexed steering wheel. The "Smart Wheel" shall be designed so that the driver's hands never need to leave the steering wheel once the engine is running and the parking brake is released.

The "Smart Wheel" steering wheel shall include ten (10) multiplexed switches that control the following functions:

- Air Horn
- Q2B (If Equipped)
- Q2B Brake (If Equipped)
- Master Warning Switch
- Mic (Push to talk)
- Siren
- Auxiliary Braking
- High Idle
- Throttle Up - High Idle Function
- Throttle Down - High Idle Function

The functions shall be multiplexed through a clock spring circuit board. Collector rings switch wiring is not acceptable! The steering wheel shall be 18 inches in diameter.

In addition to the Smart Wheel switches the electric horn switch shall be located in the center of the steering wheel.

Manufacture to supply replacement switch covers to replace covers when worn. Specific switch configurations on the Smart Wheel will be discussed at pre-construction conference.

8.9 ROAD SAFETY KIT

Exception:
Yes_____ No:_____

Bidders Page# _____

A road safety kit shall be furnished with the following equipment:

- 2 1/2 lb. B-C fire extinguisher
- Triangle safety reflectors.

9.0 *** CHASSIS/BODY ELECTRICAL & ACCESSORIES *****
9.1 CHASSIS ELECTRICAL SYSTEM

Exception:
Yes_____ No:_____

Bidders Page# _____

All electrical wiring in the chassis shall be GXL cross link insulated type. Wiring is to be color coded and include function codes every three (3) inches on both sides. Wiring harnesses shall be routed in protective, heat resistant loom, securely and neatly installed.
Two (2) power distribution centers shall be provided in central locations for greater accessibility. The power distribution centers shall contain thermal automatic reset breakers, power control relays, flashers, diode modules, daytime driving light module, and engine and transmission data links. All breakers and relays shall have a capacity substantially greater than the expected load on the related circuit, thus ensuring long component life. Power distribution centers shall be composed of a system of interlocking plastic modules for ease of custom construction. All components shall be labeled as to their function to aid in diagnostics.

The power distribution centers shall be function oriented. The first is to control major truck function. The second control center shall enable overhead switching and interior operations. Each module shall be single function coded and labeled to aid in troubleshooting. The centers will also have accessory breakers and relays for future installations. All harnesses and power distribution centers shall be electrically tested prior to

installation to ensure the highest system reliability. There shall be a diagram of the PDC with labeling included with the "As Built" Schematics to aid in diagnostics.
All external harness interfaces shall be of a triple seal type connection to ensure a proper connection. The cab/chassis and the chassis/body connection points shall be mounted in accessible locations. Complete chassis wiring schematics shall be supplied with the apparatus.

As built wiring schematics and component locators to be labeled as to their function, wire and circuit number including all connector locations. Component locator sheets shall list all relays, fuses, circuit breakers, diodes, modules and connectors. As build wiring and schematics shall provide component and connector locations.

9.2 WIRING HARNESS DESCRIPTION

Exception:
Yes_____ No:_____

Bidders Page# _____

The wiring harness contained on the chassis shall be designed to utilize wires of stranded copper or copper alloy of a gauge rated to carry 125% of maximum current for which the circuit is protected without exceeding 10% voltage drop across the circuit. Wiring will be uniquely identified by color code or circuit function code, labeled at a minimum of every three (3) inches. The identification of the wiring shall be referenced on a wiring diagram. All wires conform to SAEJ1127 (Battery Cable), SAEJ1128 (Low Tension Primary Cable), SAEJ1560 (Low Tension Thin Wall Primary Cable).

The covering of harnesses shall be moisture resistant loom with a minimum rating of 289 Degrees Fahrenheit and a flammability rating of VW-1 as defined in UL62. The covering of jacketed cable shall have a minimum rating of 289 degree Fahrenheit.

All harnesses will be securely installed in areas protected against heat, liquid contaminants and damage. The harness connections and terminations shall use a method that provides a positive mechanical and electrical connection and are in accordance with the device manufacturer's instructions. No connections within the harness may utilize wire nut, insulation displacement, or insulation piercing components.

All circuits shall conform to SAEJ1292. All circuits will be provided with low voltage over current protective devices. These devices shall be readily accessible and protected against heat in excess of component rating, mechanical damage, and water spray. Star washers shall not be used for ground connections.

9.3 DIRECT GROUNDING STRAPS

Exception:
Yes_____ No:_____

Bidders Page# ___

Direct grounding straps shall be mounted to the following areas; frame to cab, frame to body and frame to pump enclosure.

All exposed electrical connections shall be coated with "Z-Guard 8000" to prevent corrosion.

There shall be no star washers used at any grounding termination. **No Exceptions**.

Ground locations and circuits shall be included with the "As Built" wiring schematics.

9.4 EMI/RFI PROTECTION

The apparatus shall incorporate the latest designs in the electrical system with state of the art components to insure that radiated and conducted electromagnetic interference (EMI) and radio frequency interference (RFI) emissions are suppressed at the source.

Exception:
Yes_____ No:_____

Bidders Page# _____

The apparatus proposed shall have the ability to operate in the environment typically found in fire ground operations with no adverse effects from EMI/RFI.

EMI/RFI susceptibility is controlled by utilizing components that are fully protected and wiring that utilizes shielding and loop back grounds where required. The apparatus shall be bonded through wire braided ground straps. Relays and solenoids that are suspect to generating spurious electromagnetic radiation are diode protected to prevent transient voltage spikes.

In order to fully prevent the radio frequency interference the purchaser may be requested to provide a listing of the type, power output, and frequencies of all radio and bio medical equipment that is proposed to be used on the apparatus.

9.5 12 VOLT ELECTRICAL SYSTEM TESTING

Exception:
Yes_____ No:_____

Bidders Page# _____

The apparatus low voltage electrical system shall be tested and certified by the manufacturer. The certification shall be provided with the apparatus. All tests shall be performed with air temperature between 0°F and 100°F.

The following three (3) tests shall be performed in order. Before each test, the batteries shall be fully charged.

9.6 TEST #1-RESERVE CAPACITY TEST

Exception:
Yes_____ No:_____

Bidders Page# _____

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off and the minimum continuous electrical load shall be activated for 10 minutes. All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a test failure.

9.7 TEST #2-ALTERNATOR PERFORMANCE TEST AT IDLE

Exception:
Yes_____ No:_____

Bidders Page# _____

The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

9.8 TEST #3-ALTERNATOR PERFORMANCE TEST AT FULL LOAD

Exception:
Yes_____ No:_____

Bidders Page# _____

The total continuous electrical load shall be activated with the engine running up to the engine manufacturers governed speed. The test duration shall be a minimum of 2 hours. Activation of the load management system shall be permitted during this test. However, an

alarm sounded due to excessive battery discharge, as detected by the system, or a system voltage of less than 11.7 volts DC for a 12 volt system, for more than 120 seconds, shall be considered a test failure.

9.9 LOW VOLTAGE ALARM TEST

Exception:
Yes_____ No:_____

Bidders Page# _____

Following completion of the preceding tests, the engine shall be shut off. The total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm is activated.

The battery voltage shall be measured at the battery terminals. With the load still applied, a reading of less than 11.7 volts shall be considered a test failure. The battery system shall then be able to restart the engine.

At time of delivery, documentation shall be provided with the following information:

- Documentation of the electrical system performance test
- A written load analysis of the following;
- Nameplate rating of the alternator
- Alternator rating at idle while meeting the minimum continuous electrical load
- Each component load comprising the minimum continuous electrical load.
- Additional loads that, when added to the minimum continuous load, determine the total connected load.
- Each individual intermittent load.

9.10 MULTIPLEX ELECTRICAL SYSTEM WITH COLOR DISPLAY

Exception:
Yes_____ No:_____

Bidders Page# _____

A Weldon style V-MUX Multiplex System shall be provided. The V-MUX shall provide an on-board diagnostics and status, increase reliability and durability, minimize downtime, supply reverse polarity protection and dramatically simplify troubleshooting and repairs for the vehicle. It shall provide short and open circuit detection and notification, on board service information and reduce splices by 80-90%. Each node shall enable discrete load shedding, sequencing, diagnostics and PWM control. All V-MUX hardware shall be rated for -40° to +85° C. J1939 to monitor engine and transmission functions to control interlocks. A series of Mu
modules shall vary in I/O configuration, be waterproof allowing installation outside of enclosed areas and shall possess individual output internal circuit protection. The modules shall also have three status indicators visible from a service persons vantage point that shall indicate the status of the module. In the event a load requires more than 7.5 AMPS of operating current, the module shall activate a simple relay circuit integral to any of the 3 pillbox assemblies installed in the cab.

V-MUX integration shall be available for:

- System Voltage Meter
- Ammeter
- Emergency Flasher
- Headlamp Flasher
- Load Management
- Load Sequencer

- Back-Up Monitor
- Relays
- Circuit Breakers
- Door “Open” System
- Interlock Modules
- Engine Monitor Devices
- Separate Interlock Control
- Special Waterproof Enclosures
- Data Logger to record error Codes
- Mileage to match odometer
- Engine hours to match engine ECM

9.11 WELDON V- MUX DATA DOWNLOADER KIT

Exception:
Yes_____ No:_____

Bidders Page# _____

A Weldon USB Downloader Kit p/n 6131-0000-00 shall be provided to download data from the on board V-Mux system. This software shall have the ability to view system input/output (I/O) information, and include a connection from a computer to the vehicle. Weldon factory training will be provided for purchaser’s mechanics at purchaser’s facility.

The Vista IV touch screen display node with external buttons shall include the following features:

- Outside temperature display.
- A real time clock with display.
- Four (4) programmable video inputs.
- A useable temperature range from -40 degrees to 185 degrees F.
- Eight (8) factory programmed virtual switches
- Seven (7) preset navigation switches
- Selectable font sizes, types and colors for optimum user efficiency.
- Selectable color buttons and screen backgrounds.
- Functions and display to meet purchasers operational parameters

All wiring to be appropriate gauge cross link with 311 degree F. insulation. All wires in the chassis shall be circuit numbered and function coded, in addition the SAE wiring shall be color coded. The wiring shall be protected by 275 degree F. minimum high temperature flame retardant loom as required.

The V-Mux display will be mounted on a swivel mount, located in the center dash panel, toward the driver side.

9.12 V-MUX REAR VISION CAMERA

Exception:
Yes_____ No:_____

Bidders Page# _____

A Weldon V-Mux camera kit shall be provided and installed at the rear of the apparatus. The video output from the camera shall be displayed on the Vista display panel. Location to be determined at Pre-Construction conference.

9.13 COVER, REAR BODY CAMERA

Exception:
Yes_____ No:_____

Bidders Page# _____

An aluminum tread plate cover and or recessed in body and shall be fastened over the rear body camera to protect from damage and theft.

9.14 INTERLOCK INTERFACE MODULE

Exception:
Yes_____ No:_____

Bidders Page# _____

A Vocation Module, which is the interface between the multiplexing system and the pump system shall be provided. This module shall serve as the interface between the operator, engine, transmission and pumping system. The module shall be installed under the driver's side dash, in a sealed enclosure that shall possess green indicating LED's that shall indicate to service personnel the interlock state of the apparatus. In the event of a multiplexing error involving pump operation can be activated to ensure reliable pumping operations at ALL times. In addition to controlling pump function, this vocation module shall be able to provide automatic and/or manual activation of engine "Fast Idle", to maintain adequate alternator output and thus, chassis voltage.

9.18 CHASSIS DIAGNOSTICS SYSTEM

Exception:
Yes_____ No:_____

Bidders Page# _____

Diagnostic ports shall be accessible while standing on the ground and located inside the driver's side door left of the steering column. The diagnostic panel shall allow diagnostic tools such as computers to connect to various vehicle systems for improved troubleshooting providing a lower cost of ownership. Diagnostic switches shall allow engine and ABS systems to provide blink codes should a problem exist.

The diagnostic system shall include the following:

- A single port to monitor the engine, transmission and ABS system and diagnostics of the roll sensor (if applicable)
- Engine
- diagnostic switch (blink codes)
- ABS diagnostic switch (blink codes)
- Allison Transmission Codes (through touch pad shifter)
- V-MUX Connector

9.15 ADVANCED CHASSIS DIAGNOSTICS

Exception:
Yes_____ No:_____

Bidders Page# _____

A Nexiq USB Link Adapter shall be provided to interface between the chassis and a computer.

The following software shall be provided to allow technicians to view diagnostic data from the chassis components:

- Cummins Insite - Engine Diagnostic Software
- Allison Doc - Transmission Diagnostic Software
- Wabco Toolbox - ABS Diagnostic Software
- Any and All diagnostic cabling and connectors

9.16 LAPTOP COMPUTER

Exception:
Yes_____ No:_____

Bidders Page# _____

A rough Service type laptop computer, to be loaded by Fire Apparatus manufacture, with programs to allow the department to trouble shoot the electrical system and make adjustments to pre-set parameters, will be provided. A working copy of the complete Binary Code shall be provided to the purchaser for future use if needed.

Latitude 15 5000 Series (210-ABGO)
16GB (2x8GB) 1600MHz DDR3L Memory (370-AAEO)
Internal English Single Pointing Keyboard (583-BBJI)
NVIDIA GeForce GT 720M 2GB Graphics (490-BBMY)
Intel Wireless 7260 driver (555-BBQK)
256GB Mobility Solid State Drive (400-ABMX)
Windows 8.1 Pro 64-bit English (619-ADTC)
Non-Canada Orders only (332-1286)
6-cell (65Wh) Lithium Ion battery with Express Charge (451-BBDW)
Dell Professional Topload 15.6 inch Carry Case (460-BBLG)
8X DVD Media Bay Drive (429-AAJR)
Intel Dual Band Wireless-AC 7260 802.11ac/a/b/g/n 2x2 + Bluetooth 4.0 LE Half Mini Card (555-BBHI)
US Power Cord (537-BBBD)
Windows 8.1 DVD OS Recovery (English) (620-AASU)
Dell Backup and Recovery Basic 1.6 (637-AAAS)
BTO Standard shipment Air (800-BBGF)
System Documentation, English (340-ACOS)
No Camera Software (319-BBBK)
ProSupport: Next Business Day Onsite Service after Remote Diagnosis 2 Year Extended (955-7445)
ProSupport: Next Business Day Onsite Service after Remote Diagnosis Initial Year (955-7448)
ProSupport: 7x24 Technical Support, 2 Year Extended (955-7455)
ProSupport: 7x24 Technical Support, Initial (955-7458)
Dell Limited Hardware Warranty Plus Service Extended Year(s) (955-7525)
Dell Limited Hardware Warranty Plus Service Initial Year (955-7526)
Thank you choosing Dell ProSupport. For tech support, visit
http://support.dell.com/ProSupport or call 1-866-5 (989-3449)
No Out-of-Band Systems Management (631-AACH)
No Resource DVD (430-XXYG)
No Fingerprint Reader (Single Pointing) Palmrest (346-BBHP)
System Documentation, English (340-ADNT)
Energy Star 6.0 (387-BBIL)
4th gen Intel Core i7-4600U Processor (2.1 GHz, 4M Cache) (338-BCUZ)
Intel Core i7-4600U Processor base with Discrete Graphics and Smartcard Reader (329-BBRY)
Dell Data Protection Encryption Personal Edition Digital Delivery (421-9984)
Dell ProSupport for Software, Dell Data Protection Encryption Personal Edition, 1 Year (954-3455)
E-Port Plus, dock adds dual digital display and legacy port support, USB 3.0 (452-BBBH)
Light Sensitive Webcam and Noise Cancelling Digital Array Mic, Touch Screen (325-BBCG)
Ship Material, Shuttle, Mix Model (340-AFZW)
Cyberlink Media Suite Essentials for Windows 8.1 with Media (658-BBVS)

Exceptio

Regulatory Label, Touch (389-BCZY)
No Intel Responsive (551-BBBJ)
Intel Core i7 Processor Label (338-BCMH)
15.6" HD (1366x768) Touch Display (391-BBHV)
Microsoft Office Trial, MUI, OptiPlex, Precision, Latitude (630-AABP)
Dell Digital Delivery Cirrus Client (340-AAUC)
Thank you for buying Dell (421-9982)
Dell Data Protection Security Tools Digital Delivery/NB (422-0007)
SW,MY-DELL,CRRS (422-0052)
Latitude 15 5000 Software Drivers (551-BBBU)
Not Selected in this Configuration (640-BBHQ)
Visit www.dell.com/encryption (640-BBHR)
Waves Maxx Audio Royalty (658-BBNF)
No Anti-Virus Software (650-AAAM)
E5 90W AC Adapter, 3-pin (492-BBCU)

Exception:
Yes_____ No:_____

Bidders Page# _____

9.17 VOLTAGE MONITOR SYSTEM

A voltage monitoring system shall be provided to indicate the status of the battery system connected to the vehicle's electrical load. The system shall provide visual and audible warning when the system voltage is below or above optimum levels.

The alarm shall activate if the system falls below 11.8 volts DC for more than two (2) minutes.

Exception:
Yes_____ No:_____

Bidders Page# _____

9.18 INDICATOR LIGHT AND ALARM PROVE-OUT SYSTEM

A system shall be provided which automatically tests basic indicator lights and alarms located on the cab instrument panel.

Exception:
Yes_____ No:_____

Bidders Page# _____

9.19 12 VOLT V-MUX Load Controller

A sequencer shall be provided that automatically activates and deactivates vehicle loads in a preset sequence thereby protecting the alternator from power surges. This sequencer operation shall allow a gradual increase or decrease in alternator output, rather than loading or dumping the entire 12 volt load to prolong the life of the alternator.

Emergency light sequencing shall operate in conjunction with the emergency master light switch. When the emergency master switch is activated, the emergency lights shall be activated one by one at half second intervals. Sequenced emergency light switch indicators shall flash while waiting for activation.

When the emergency master switch is deactivated, the sequencer shall deactivate the warning light loads in the reverse order.

Rear of cab Air-Conditioning and Heat shall be load managed.

9.20 ELECTRICAL HARNESS REQUIREMENT

Exception:
Yes_____ No:_____

Bidders Page# _____

To ensure dependability, all 12-volt wiring harnesses installed by the manufacturer shall conform to the following specifications:

- SAE J 1128 - Low tension primary cable
- SAE J 1292 - Automobile, truck, truck-tractor, trailer and motor coach wiring
- SAE J 163 - Low tension wiring and cable terminals and splice clips
- SAE J 2202 - Heavy duty wiring systems for on-highway trucks
- NFPA 1901 - Standard for automotive fire apparatus
- FMVSS 302 - Flammability of interior materials for passenger cars, multipurpose passenger vehicles, trucks and buses
- SAE J 1939 - Serial communications protocol
- SAE J 2030 - Heavy-duty electrical connector performance standard
- SAE J 2223 - Connections for on board vehicle electrical wiring harnesses
- NEC - National Electrical Code
- SAE J 561 - Electrical terminals - Eyelet and spade type
- SAE J 928 - Electrical terminals - Pin and receptacle type A.

For increased reliability and harness integrity, harnesses shall be routed throughout the cab and chassis in a manner which allows the harnessing to be laid into its mounting location. Routing of harnessing which requires pulling of wires through tubes is never allowed at the manufacturer.

Wiring shall be run in loom or conduit where exposed, and have grommets or other edge protection where wires pass through metal. Wire colors shall be integral to each wire insulator and run the entire length of each wire. Harnessing containing multiple wires and uses a single wire color for all wires shall not be allowed. Function and number codes shall be continuously imprinted on all wiring harness conductors at 3.00" intervals. All wiring installed between the cab and into doors shall be protected by a wire conduit to protect the wiring. Exterior exposed wire connectors shall be positive locking, and environmentally sealed to withstand elements such as temperature extremes, moisture and automotive fluids. Electrical wiring and equipment shall be installed utilizing the following guidelines:

- All holes made in the roof shall be caulked with silicon. Large fender washers, liberally caulked, shall be used when fastening equipment to the underside of the cab roof.
- Any electrical component that is installed in an exposed area shall be mounted in a manner that shall not allow moisture to accumulate in it. Exposed area shall be defined as any location outside of the cab or body.

For low cost of ownership, electrical components designed to be removed for maintenance shall be quickly accessible. For ease of use, a coil of wire shall be provided behind the appliance to allow them to be pulled away from the mounting area for inspection and service work. Fasteners shall be nutsert or ASE fastener attached. Sheet metal or self-tapping screws are unacceptable.

- Corrosion preventative compound shall be applied to non-waterproof electrical connectors located outside of the cab or body. All non-waterproof connections shall require this compound in the plug to prevent corrosion and for easy separation of the plug.

- Any lights containing non-waterproof sockets in a weather-exposed area shall have corrosion preventative compound added to the socket terminal area.
- All electrical terminals in exposed areas shall have protective coating applied completely over the metal portion of the terminal.
- Rubber coated metal clamps shall be used to support wire harnessing and battery cables routed along the chassis frame rails.
- Heat shields shall be used to protect harnessing in areas where high temperatures exist. Harnessing passing near the engine exhaust shall be protected by a heat shield.
- Cab and crew cab harnessing shall not be routed through enclosed metal tubing. Dedicated wire routing channels shall be used to protect harnessing therefore improving the overall integrity of the vehicle electrical system. The design of the cab shall allow for easy routing of additional wiring and easy access to existing wiring.
- All standard wiring entering or exiting the cab shall be routed through sealed bulkhead connectors to protect against water intrusion into the cab.

9.21 BATTERY CABLE INSTALLATION

Exception:
Yes_____ No:_____

Bidders Page# _____

All 12-volt battery cables and battery cable harnessing installed by the apparatus manufacturer shall conform to the following requirements:

- SAE J 1127 - Battery Cable
- SAE J 561 - Electrical terminals, eyelets and spade type
- SAE J 562 - Nonmetallic loom
- SAE J 836 A - Automotive metallurgical joining
- SAE J 1292 - Automotive truck, truck-tractor, trailer and motor coach wiring
- NFPA 1901 - Standard for automotive fire apparatus.

Battery cables and battery cable harnessing shall be installed utilizing the following guidelines:

- Splices shall not be allowed on battery cables or battery cable harnesses.
- For ease of identification and simplified use, battery cables shall be color coded. All positive battery cables shall be marked red in color. All negative battery cables shall be black in color.
- For ease of identification, all positive battery cable isolated studs throughout the cab and chassis shall be red in color.
- For increased reliability and reduced maintenance, all electrical buss bars located on the exterior of the apparatus shall be coated to prevent corrosion.
- An operational test shall be conducted to ensure that any equipment that is permanently attached to the electrical system is properly connected and in working order.

9.22 ALTERNATOR

Exception:
Yes_____ No:_____

Bidders Page# _____

There shall be a Niehoff C680-1 430 amp brushless, serpentine belt driven alternator. The brushless design of the transfers magnetic fields between the rotor and stator air-gap without brushes.

The alternator installation shall be designed to provide maximum output at engine idle speed, by using "Remote Sense" in order to meet the minimum continuous electrical load of the apparatus as required.

The alternator shall carry a 3 Year/Unlimited Mile warranty.

9.23 BATTERY SYSTEM

Exception:
Yes_____ No:_____

Bidders Page# _____

Five (5) Odyssey # PC2150/31S, Group 31 Absorbed Glass Mat, maintenance free batteries shall be provided. Each battery shall be rated at 1,150 CCA at 0° F and shall have a reserve capacity of 205 minutes.

Wiring for the batteries shall be 4/0 welding type dual path starting cables for SAEJ541.

9.24 BATTERY STORAGE

Exception:
Yes_____ No:_____

Bidders Page# _____

Batteries shall be securely mounted in fixed 3/16" GR50 steel trays located on each side of the chassis frame. Complete access shall be provided when the cab is fully tilted. Batteries shall be mounted on non-corrosive matting material.

The battery tray shall be able to withstand a longitudinal acceleration of -46.5g at 0.246 seconds in accordance to SAE J211 standards using a channel frequency class 600 filter. Testing shall be performed at and verified by a third party testing and evaluation center.

9.25 BATTERY DISCONNECT SWITCH

Exception:
Yes_____ No:_____

Bidders Page# _____

The chassis batteries shall be wired in parallel to a single 12 volt electrical system, controlled through a heavy duty master disconnect switch. The master disconnect switch shall be located within easy access of the driver upon entering or exiting the cab.

9.26 BATTERY JUMPER STUDS

Exception:
Yes_____ No:_____

Bidders Page# _____

A set of Cole Hersee battery jumper studs, model #46210-02 (red) and #46210-03 (black) shall be provided to allow the battery system to be jump started or charged from an external source. The studs shall be located on the bottom of the battery box on the driver's and passenger side of the chassis. Each stud shall be equipped with both a rubber protector cap and a 2" square non-conductive plate to prevent accidental shorting.

9.27 120 VOLT SHORELINE CONNECTION - "SUPER" AUTO EJECT

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) Kussmaul "Super" Auto Eject model 091-55-20-120, automatic, 120 volt, 20 amp shoreline disconnect shall be provided for the on board, 110 volt battery charging systems.

The disconnect shall be equipped with a NEMA 5-20 P male receptacle, which shall automatically eject the shoreline when the vehicle starter is energized. A label shall be provided indicating voltage and amperage ratings.

9.28 SHORELINE POWER INLET PLATE

Exception:
Yes_____ No:_____

Bidders Page# _____

A shoreline power receptacle information plate shall be permanently affixed at or near the power inlet. The plate shall indicate the following;

- Type of Line Voltage
- Current Rating in Amps Power Inlet Type (DC or AC).

The Kussmaul auto-eject connection shall be equipped with a Red weatherproof cover.

The shoreline receptacle shall be located in the area directly adjacent to the driver's side cab door. Assembly shall be easily serviceable.

9.28 BATTERY CHARGER

Exception:
Yes_____ No:_____

Bidders Page# _____

An Iota IQ4 Smart Charger shall be provided for maintaining the vehicle’s battery system. Unique electronic sensing circuits sense the true battery voltage while eliminating the need for external sense wires. Output current shall be 75 amperes @ 12 volt DC.

The air compressor shall maintain the air pressure in the chassis air brake system while the vehicle is not in use. The air compressor shall have a rated input at 12 volt DC @ 12 amps and a max output of 100psi.

An LED bar graph display shall be located near the shoreline connection to monitor the battery status and to only be illuminated when connected to shore power.

9.29 TRANSFER SWITCH

Exception:
Yes_____ No:_____

Bidders Page# _____

An automatic power relay shall be installed to allow interior 120 volt accessories to be powered by the 120 volt shoreline or the generator. The interior accessories to be powered by the shoreline shall be wired through a separate sub-panel breaker box. This shall allow for a continuous power supply to the interior accessories while the apparatus is parked in the station. The maximum load for the transfer / relay shall be 20 amps at 120 volts.

9.30 EMERGENCY SWITCHES

Exception:
Yes_____ No:_____

Bidders Page# _____

A switch control console shall be provided in the center dash panel between the driver's and officer's position. This console shall separate the emergency / auxiliary electrical functions from the regular chassis functions. Eight (8) Class One model # SPS programmable touch pad type switches with integral indicator lights shall be provided.

A master warning switch shall be provided, which shall allow pre-setting of emergency light switches and shall have a red integral indicator light. Next to the master switch, a total of six (6) load manageable emergency switches shall be provided. The last remaining switch shall be a ground light switch. All switches, (other than the master switch), shall have switch function labeling and an amber integral indicator light.

9.31 "LED" CAB INTERIOR LIGHTING

Exception:
Yes_____ No:_____

Bidders Page# _____

Four (4) Akron 8080-8000-13 interior LED combination red/white dome lights shall be furnished in the cab, two (2) in the forward section and two (2) in the rear crew section. Each dome light shall have an integral selector switch. Each dome light shall also activate when the respective, adjacent cab door is opened.

9.32 MAP / COURTESY LIGHT

Exception:
Yes_____ No:_____

Bidders Page# _____

A combination map / courtesy light, with two (2) individually switched adjustable map lights, shall be provided in the cab head liner, between driver's and officers seating positions.

9.33 CAB SPOTLIGHT

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) Collins model # CD-CL-HID-1, H.I.D. hand held, spot light shall be provided. The light features a textured powder-painted black housing and cast handle for durability, with overall dimensions of 8.25” long by 7.68” wide by 11.75” high. The light features a 35W Xenon HID (High Intensity Discharge) bulb with integral 12 VDC ballast controlled through a two position off momentary rocker switch on the handle. Operating current shall be 3.5A, maximum inrush current 6A. The light shall be powered through a nine (9) foot coiled power cord with a dashboard power outlet plug exiting from rear of housing.

9.34 DOOR OPEN INDICATOR

Exception:
Yes_____ No:_____

Bidders Page# _____

A Whelen 800C red strobe indicator light (located in the driving compartment) shall be illuminated automatically per NFPA (1996 edition, 9-11 or 1999 edition 11-11). The light shall be labeled "Do Not Move Apparatus If Light Is On".
An audible alarm shall be provided with the open door indicator light.

The alarm shall be controlled by the parking brake, so that it shall deactivate when the parking brake is set.

Exception:
Yes_____ No:_____

9.35 12 VOLT POWER PORT NEAR OFFICER

Bidders Page# _____

One (1) 12 volt power port accessory outlet(s) shall be installed in the cab of the truck for the fire departments accessory devices. The port(s) shall be located as directed near the officer's seating position for devices such as cellular phones.

Exception:
Yes_____ No:_____

9.36 12 VOLT POWER PORT - EMS COMPARTMENT

Bidders Page# _____

Two (2) 12 volt power port accessory outlet(s) shall be installed in the cab of the truck for the fire departments accessory devices. The port(s) shall be located in the rear EMS compartment, as directed, for devices such as cellular phones.

Exception:
Yes_____ No:_____

9.37 USB CHARGING PORT NEAR OFFICER

Bidders Page# _____

Two (2) round USB charging port(s) shall be installed in the cab of the truck for the fire departments accessory devices. Each port shall have two (2) USB connections and shall have a 5 volt, 2.1 amp max output. The port(s) shall be located as directed near the officer's seating position for devices such as cellular phones.

Exception:
Yes_____ No:_____

9.38 12 VOLT ACCESSORY CIRCUIT – Center of CAB DASH

Bidders Page# _____

Four- (4) power studs shall be provided in the electrical component compartment for two way radio equipment.

The studs shall consist of the following:

Stud #1 shall be 12-volt 40-amp, controlled by battery switch.
Stud #2 shall be 12-volt 100-amp, ground.
Stud #3 shall be 12-volt 60-amp, controlled by ignition switch.
Stud #4 shall be 12-volt 60-amp, battery direct.

Exception:
Yes_____ No:_____

9.39 HEADLIGHTS CLUSTER

Bidders Page# _____

Two (2) quad, halogen headlight modules with a bright finish bezel shall be furnished, one (1) each side, on the front of the cab. Each head light module shall incorporate an individual low beam and a high beam headlight. High beam actuation shall be controlled on the turn signal lever.

Traditional style rectangle headlight buckets.

Exception:
Yes_____ No:_____

9.40 DAYTIME RUNNING LIGHTS

Bidders Page# _____

The chassis head lights shall have integrated circuitry to actuate the low beam headlights at a maximum of 80 percent of capacity whenever the chassis engine is running.

The daytime running lights shall be interlocked with the parking brake and shall be able to be shutoff with headlight switch.

9.41 SECONDARY DUAL LIGHT MODULE

Exception: Yes_____ No:_____

Bidders Page# _____

Two (2) Whelen 60A00TAR arrow shaped, amber LED turn signals shall be provided, one (1) in each side of the dual light module above the headlights.

The NFPA required, Zone "A" lower warning lights shall be incorporated into each side dual light module noted above.

9.42 AUXILIARY TURN SIGNALS

Exception: Yes_____ No:_____

Bidders Page# _____

Two (2) Whelen 60A00TAR arrow shaped, amber LED turn signals shall be provided, one (1) at each rear lower outer corner of the cab in a 15-degree angled bracket.

9.43 DOT MARKER LIGHTS AND REFLECTORS

Exception: Yes_____ No:_____

Bidders Page# _____

Five (5) DOT approved Whelen (or equal) Light Emitting Diode (LED) cab marker lamps shall mounted on the top front edge of the cab roof.

Amber LED marker lights with integral reflectors shall be provided on the side of the cab adjacent to the driver's door, one (1) each side.

Truck-Lite Model # 18 red LED marker lights with integral reflectors shall be provided at the lower side rear, one (1) each side.

Truck-Lite # 60115Y yellow LED side marker and turn lights shall be provided on the apparatus lower side, forward of rear axle, one (1) each side.

Truck-Lite Model #19 red LED clearance lights shall be provided on the apparatus rear upper, one (1) each side at the outermost practical location.

Truck-Lite Model # 33740R LED 3-lamp identification bar will be provided on the apparatus rear center. The lights shall be red in color.

Truck-Lite # 98034Y yellow reflectors shall be provided on the apparatus body lower side, as far forward and low as practical, one (1) each side if the apparatus is 30' long or longer.

Truck-Lite # 98034R red reflectors shall be provided on the apparatus rear, one (1) each side at the outermost practical location.

9.44 LED LICENSE PLATE LIGHT - REAR

Exception: Yes_____ No:_____

Bidders Page# _____

One (1) LED license plate light shall be provided above the mounting position of the license plate. The light shall be clear in color and shall have a chrome finish.

9.45 TAIL, STOP, TURN AND BACK-UP LIGHTS

Exception: Yes_____ No:_____

Bidders Page# _____

Two (2) Whelen "M" series, 4-1/8" x 6-1/2", LED red combination tail and stop lights, shall be mounted one each side at the rear of the body.

Two (2) Whelen "M" series, 4-1/8" x 6-1/2", LED amber arrow turn signal lights, shall be mounted one each side, on a vertical plane with the tail/stop lights.

Two (2) Whelen "M" series, 4-1/8" x 6-1/2", white halogen back-up lights, shall be mounted one each side on a vertical plane with the turn/tail/stop signals. These lights shall activate when the transmission is placed in reverse gear.

Two (2) Whelen PLAST4V mounting flanges, installed one (1) on each side, shall be provided to mount the lights described above in one common mounting flange. The fourth opening shall be for the lower rear warning lights.

The lights shall be mounted in order, from top to bottom, as described above.

9.46 CAB STEP LIGHTS

Exception:
Yes_____ No:_____

Bidders Page# _____

3-LED surface mounted, chassis step lights shall be provided and controlled with marker light actuation. Step lights shall be located to properly illuminate all chassis access steps and walkway areas.

9.47 BODY STEP LIGHTS

Exception:
Yes_____ No:_____

Bidders Page# _____

3-LED surface mounted, body step lights shall be provided and controlled with marker light actuation. Step lights shall be located to properly illuminate all body access steps and walkway areas.

9.48 DUNNAGE AREA LIGHTING

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) 3-LED surface mounted lights shall be provided in the dunnage area to provide adequate illumination of this area.

9.49 SCENE LIGHTS - BEHIND FRONT CAB DOORS

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) Whelen # M9LZC "M" Series super LED scene lights shall be provided, one on each side of the cab, directly above the center cab window and mounted as high as possible on the cab in a chrome plated flange. The scene lights shall be wired through the load management system.

9.50 SCENE LIGHTS - BACK OF CAB

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) Whelen # M6ZC LED scene light shall be provided, centered at the upper edge of the cab rear exterior wall in a chrome bezel. The scene light shall be wired through the load management system.

It will be controlled at the pump panel.

9.51 SCENE LIGHTS - DRIVER SIDE OF BODY

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) Whelen # M9LZC "M" Series super LED scene lights shall be provided. The scene lights shall be installed one rearward and one forward on the driver side of the body in a chrome plated flange. The scene lights shall be wired through the load management system. Discuss switching options and Pre-Construction conference.

9.52 SCENE LIGHTS - OFFICER SIDE OF BODY

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) Whelen # M9LZC "M" Series super LED scene lights shall be provided. The scene lights shall be installed one rearward and one forward on the officer side of the body

in a chrome plated flange. The scene lights shall be wired through the load management system.

9.53 SCENE LIGHTS - Rear OF BODY

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) Whelen # 9SC0ENZR super LED scene lights shall be provided. The scene lights shall be installed one on the driver's side and one on the officer side of the body in a chrome plated flange. The scene lights shall be wired through the load management system.

9.54 CAB DOOR LIGHT SWITCHING - CAB

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) switches shall be provided in the cab warning light switch console to turn the lights at the cab doors on and off. One (1) switch shall control the driver side light and one (1) switch shall control the officer side light.

9.55 DRIVER SIDE OF BODY LIGHT SWITCHING - CAB

Exception:
Yes_____ No:_____

Bidders Page# _____

A switch shall be provided in the cab warning light switch console to turn the driver side of body lights on and off.

9.56 OFFICER SIDE OF BODY LIGHT SWITCHING - CAB

Exception:
Yes_____ No:_____

Bidders Page# _____

A switch shall be provided in the cab warning light switch console to turn the officer side of body lights on and off.

9.56 REAR OF CAB LIGHT SWITCHING - PUMP PANEL

Exception:
Yes_____ No:_____

Bidders Page# _____

A switch shall be provided on the pump panel to turn the rear cab scene light on and off.

9.57 GROUND LIGHTS - CAB

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) ROM V4 12" LED ground light shall be provided under each side cab door entrance step, four (4) total. The lights shall be mounted in ROM standalone aluminum mounting track with mounting slots at each end. The ground lights shall turn on

automatically with each respective door jamb switch and also by a master ground light switch in the warning light switch console.

Each light shall illuminate an area at a minimum 30" outward from the edge of the vehicle.

9.58 GROUND LIGHTS - PUMP PANEL

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) ROM V4 12" LED ground light shall be provided under each side pump panel running board, two (2). The lights shall be mounted in ROM standalone aluminum mounting track with mounting slots at each end. The ground lights shall be activated by a master ground light switch in the cab and shall be wired through the load management system.

9.59 GROUND LIGHTS - REAR

One (1) ROM V4 12" LED ground light shall be provided under each rear body corner, two (2) total. The lights shall be mounted in ROM standalone aluminum mounting track with mounting slots at each end. The ground lights shall be activated by a master ground light switch in the cab and shall be wired through the load management system.

9.60 GROUND LIGHT SWITCHING

Exception:
Yes_____ No:_____

Bidders Page# _____

The cab and body ground lights shall activate by engaging the parking brake.

Ground lights to activate on the side of the vehicle that the turn signal switch is activated to turn left or turn right.

Ground lights on both sides of vehicle from the pump panel rearward shall activate when unit is placed into reverse.

9.61 ROOF MOUNT 150W LED BROW LIGHT - ABOVE WINDSHIELD

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) Whelen Pioneer Plus # PFP2 super LED roof mount light shall be provided and installed. The mounting bracket shall attach to the lamp head and be machined to conform to the roof radius.

The lamp head shall have two (2) dual stacked white LED modules and shall draw 12 amps and generate 14,000 lumens. The lamp head shall incorporate an adjustable downward angle to maximize the light effectiveness.

The lamp head and brackets shall be powder coated white.

The Whelen brow mounted flood light shall be located above the windshield in the center of the cab.

9.62 LIGHT(S) ABOVE WINDSHIELD SWITCHING - CAB

Exception:
Yes_____ No:_____

Bidders Page# _____

A switch shall be provided in the cab warning light switch console for both the driver and passenger to turn the light(s) above windshield on and off.

10.0 **** BODY ELECTRICAL SYSTEM ****

10.1 12 VOLT BODY ELECTRICAL SYSTEM

Exception:
Yes_____ No:_____

Bidders Page# _____

All electrical lines in the body shall be protected by automatic circuit breakers, conveniently located to permit ease of service. Flashers, heavy solenoids and other major electrical controls shall be located in a central area near the circuit breakers. All electrical components to be labeled and listed in the as built wiring schematics and component locator.

All lines shall be color and function coded every 3", easy to identify, oversized for the intended loads and installed in accordance with a detailed diagram. A complete wiring diagram shall be supplied with the apparatus.

Wiring shall be carefully protected from weather elements and snagging. Heavy duty loom shall be used for the entire length. Grommets shall be utilized where wiring passes through panels.

In order to minimize the risk of heat damage, wires run in the engine compartment area shall be carefully installed and suitably protected by the installation of heat resistant shielded loom.

All electrical equipment shall be installed to conform to the latest federal standards as outlined in NFPA 1901.

10.2 BODY ELECTRICAL JUNCTION COMPARTMENT

Exception:
Yes_____ No:_____

Bidders Page# _____

A weather resistant electric junction compartment shall be provided within the body or pump enclosure, depending on vehicle configuration. This compartment shall provide an easily accessible enclosure to house all of the body wiring junction points, terminal strips, solenoids, etc. The design of this compartment shall not decrease the storage capacity area of the compartment or area in which it is located. A removable panel shall be provided for access to this compartment. Diagram of layout ID components included in as builds.

10.3 PUMP ENCLOSURE WORK LIGHTS

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) lights shall be provided inside the pump enclosure providing a minimum of 20 candlepower illumination. Each light shall have their own independent switch incorporated into the light head.

10.4 ENGINE COMPARTMENT WORK LIGHTS

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) lights shall be provided inside the engine enclosure that will provide a minimum of 20 candlepower illumination. Each light shall have their own independent switch incorporated into the light head.

10.5 Kinequip Flexible LED Rope COMPARTMENT LIGHTS

Exception:
Yes_____ No:_____

Bidders Page# _____

Each individual, equipment storage compartment shall be equipped with the AMDOR Luma Bar LED light fixture mounted one each side of the forward (and rear) vertical door frame.

10.6 NFPA AUDIBLE AND LIGHTING WARNING PACKAGE

Exception:
Yes_____ No:_____

Bidders Page# _____

The following warning light package shall include all of the minimum warning light and actuation requirements for the current revision of the NFPA 1901 Fire Apparatus Standard. The lighting as specified shall meet the requirements for both "Clearing Right of Way" and "Blocking Right of Way" which includes disabling all white warning lights when the apparatus is in "Blocking Right of Way" mode.

10.7 LIGHT PACKAGE ACTUATION CONTROLS

Exception:
Yes_____ No:_____

Bidders Page# _____

The entire warning light package shall be actuated with a single warning light switch located on the cab switch panel. The wiring for the warning light package shall engage all of the lights required for "Clearing Right of Way" mode when the vehicle parking brake is not engaged. An automatic control system shall be provided to switch the warning lights to the "Blocking Right of Way" mode when the vehicle parking brake is engaged.

10.8 WARNING LIGHT FLASH PATTERN

Exception:
Yes_____ No:_____

Bidders Page# _____

All of the perimeter warning lights shall be set to an NFPA compliant flash pattern by the apparatus manufacturer.

10.9 UPPER LEVEL LIGHTING - WHELEN

10.9.1 NFPA ZONE A, UPPER

Exception:
Yes_____ No:_____

Bidders Page# _____

A Whelen # FNQLED "Edge Freedom", 88" cab roof warning light bar shall be furnished and rigidly mounted on top of the cab roof.

The light bar shall be equipped with the following:

- Clear Lenses
- Two Front Corner Red Linear LED's
- Two Red Forward Facing Linear LED's
- Two White Forward Facing Linear LED's
- Two Red End Linear LED's.

If equipped, the forward facing white lights shall be automatically disabled for the "Blocking Right of Way" mode.

The Freedom light bar shall be equipped with a # 795H Low Profile LED Opticom emitter. The Opticom emitter shall be disabled automatically for the "Blocking Right of Way" mode.

10.9.2 NFPA ZONE C, UPPER

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) Whelen B6MM**P LED beacon lights with integral lower level directional LED light shall be mounted one (1) each side at the rear of the body.

Each beacon shall have red LED's with a clear lens and a red lower LED with clear lens.

10.9.3 NFPA ZONES B & D REAR, UPPER

Exception:
Yes_____ No:_____

Bidders Page# _____

The lighting requirement for this area is covered by the lights noted in Zone "C" - Upper.

10.9.4 NFPA ZONES B & D FRONT, UPPER

Exception:
Yes_____ No:_____

Bidders Page# _____

The lighting requirement for this area is covered by the lights noted in Zone "A" - Upper.

10.10 LOWER LEVEL LIGHTING - WHELEN

10.10.1 NFPA ZONE A, LOWER

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) Whelen 60*02F*R 600 super LED light heads shall be provided and installed one (1) each side.

Each light head shall be equipped with red LED's and a clear lens.

The lights shall be installed with a chrome plated mounting flange.

The lower Zone A warning lights shall be mounted in the custom chassis headlight bezels.

10.10.2 NFPA ZONE C, LOWER

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) Whelen 60*02F*R 600 super LED light heads shall be provided and installed one (1) each side directly below the DOT stop, tail, turn and backup lights.

Each light head shall be equipped with red LED's and a clear lens.

The lights shall be installed with a chrome plated mounting flange.

10.10.3 NFPA ZONES B & D FRONT, LOWER

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) Whelen 60*02F*R 600 super LED light heads shall be provided and installed one (1) each side.

Each light head shall be equipped with red LED's and a clear lens.

The lights shall be installed with a chrome plated mounting flange.

The lower Zone B & D warning lights shall be mounted on the sides of the custom chassis front bumper.

10.10.4 NFPA ZONES B & D MIDSHIP, LOWER

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) Whelen 60*02F*R 600 super LED light heads shall be provided and installed one (1) each side.

Each light head shall be equipped with red LED's and a clear lens.

The lights shall be installed with a chrome plated mounting flange.

10.10.5 NFPA ZONES B & D REAR, LOWER

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) Whelen 60*02F*R 600 super LED light heads shall be provided and installed one (1) each side.

Each light head shall be equipped with red LED's and a clear lens.
The lights shall be installed with a chrome plated mounting flange.

10.11 WARNING LIGHT SYSTEM CERTIFICATION

Exception:
Yes_____ No:_____

Bidders Page# _____

The warning light system(s) specified above shall not exceed a combined total amperage draw of 45 AMPS with all lights activated in either the "Clearing Right of Way" or the "Blocking Right of Way" mode.

The warning light system(s) shall be certified by the light system manufacturer(s), to meet all of the requirements in the current revision of the NFPA 1901 Fire Apparatus Standard as noted in the General Requirements section of these specifications. The NFPA required "Certificate of Compliance" shall be provided with the completed apparatus.

10.12 AUXILIARY WARNING LIGHTS

Exception:
Yes_____ No:_____

Bidders Page# _____

Four (4) surface mounted Whelen 90**5F*R super LED light heads shall be mounted on the rear face of the body. One (1) pair will be mounted in upper Zone C and the second pair will be mounted near the mid point of the body height. **There shall be 21" between the upper light and the lower lights to allow the department to install its number placards.**

Each light head shall be equipped with red LED's and a clear lens.

The lights shall be installed with a chrome plated mounting flange.

The lights specified above shall be provided in addition to the NFPA required Optical Warning Light Package and shall be switched independently from the light package. Additionally, wiring for the independently switched lights specified, shall be run through the Load Management System to ensure that the electrical system is not overloaded by the additional amperage draw requirements.

10.13 SURFACE LIGHT MOUNTING

Exception:
Yes_____ No:_____

Bidders Page# _____

The upper Zone C lights and the mid Zone C lights shall be surface mounted into the body.

10.14 TRAFFIC ADVISER WARNING LIGHT

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) Whelen LED "Traffic Advisor", model TAL85 48", rear directional light shall be recessed and installed on the rear of the body under the intermediate rear step underneath the hose bed. The light shall be equipped with eight (8) lamps. The directional light shall be activated by a control module. The control module shall be conveniently located near the driver's position. The rear directional light shall be wired through the load management system of the unit.

11.0 *** AUDIBLE WARNING EQUIPMENT *******

11.1 ELECTRIC HORN

Exception:
Yes_____ No:_____

Bidders Page# _____

A single electric horn activated by the steering wheel horn button shall be furnished.

A three (3) position rocker switch shall be installed on the cab dash to activate from the steering wheel horn button one of the following: DOT horn, air horn, or electronic/mechanical siren.

11.2 BACK-UP ALARM

Exception:
Yes_____ No:_____

Bidders Page# _____

An ECCO # SA-917, self-adjusting 87 thru 112dBA back-up alarm, shall be provided and installed at the rear of the apparatus under the tailboard. The back-up alarm shall activate and automatically adjust to ambient noise levels when the transmission is placed in reverse gear and the ignition is "on".

11.3 AIR HORNS

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) chrome plated air horns shall be at the front of the vehicle. The air horns shall be mounted in full compliance with NFPA-1901. The supply lines shall be dual 1/4" lines with equal distance from each horn.

Both air horns shall be recessed in the front bumper. One on left side and one on right side of bumper equally spaced

The air horn(s) shall be controlled by a foot switch on the officer's side and the steering horn button on driver's side. An air horn/electric DOT horn selector switch shall be furnished on the dash for the drivers steering horn button. There shall also be a foot switch for the driver that can operate the mechanical and electronic siren.

11.4 ELECTRONIC SIREN

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) Federal Model # PA300-MSC 100 watt electronic siren shall be provided featuring: wail, yelp and hi-lo siren tones along with public address, radio rebroadcast, TAP II and air horn with siren override. A hardwired microphone shall be provided for the public address feature.

The electronic siren and speaker shall meet the NFPA required SAE certification to ensure compatibility between the siren and speaker.

One (1) Federal, model # ES100 siren speaker shall be provided, recessed in the front bumper and wired to the electronic siren.

11.5 FEDERAL Q2B MECHANICAL SIREN

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) Federal Model #Q2B mechanical siren shall be provided to provide audible warning.

The Q2B siren shall be semi-recessed into the bumper on the officer's side. The siren shall be recessed so the front grille portion of the siren is exposed and protruding beyond the bumper.

A floor mounted foot switch shall be provided for the officer. A siren brake button shall be provided near the driver's position.

A rocker switch shall be installed in the dash panel to allow control of either the air horn or the siren from the steering wheel horn button for the driver.

A second push button siren brake switch shall be provided on the cab dash near the officers seating position.

Two (2) yellow, NFPA compliant, rubber coated steel headset hanger hooks shall be furnished in the front section of the cab to hold the driver and offer intercom headsets while not in use.

Two (2) yellow, NFPA compliant, rubber coated steel headset hanger hooks shall be furnished to hold the intercom headsets while not in use in the rear section of cab by the jump seats.

11.6 Setcom Wireless 9000E INTERCOM SYSTEM

Exception:
Yes_____ No:_____

Bidders Page# _____

A Setcom intercom system shall be provided in the front & rear of the cab. The system shall be capable of interfacing with a two-way radio system (note: an authorized two-way radio installer shall be responsible for interfacing the intercom system with the two-way radio). Intercom shall be operable at all times and each position shall have an external antenna.

The intercom system shall include:

1. RC-18MU4-3 Radio Cable
1. RIM-900-BAL Radio Interface Module, System 9000
1. JS-900-20 Jump seat Station
2. CSB-900W3-CP Kit Wireless Headsets
2. CSB-901W3-3-CP Kit Wireless Headset
1. IM-900 Master Station, System 900

11.7 DRIVERS AND OFFICERS HEADSETS From Setcom Wireless SYSTEMs

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) single charge plug under helmet wireless radio transmit headsets shall be furnished for the driver and officer seating locations in the cab. There shall be a driver and officer's headset. The intercom headsets shall have adjustable volume, noise-canceling electric microphone, adjustable head strap, and a flex-style boom which rotates for left or right placement. The sets shall also have comfortable gel ear seals.

11.8 REAR JUMPSEAT HEADSETS

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) single charge plug under helmet wireless radio transmit headsets shall be furnished for the rear crew seating locations in the cab. The intercom headsets shall have adjustable volume, noise-canceling electric microphone, adjustable head strap, and a flex-style boom which rotates for left or right placement. The sets shall also have comfortable gel ear seals. Push to Talk switch to shutoff headset.

11.9 CUSTOMER FURNISHED MOBILE TWO-WAY RADIO INSTALLATION

Exception:
Yes_____ No:_____

Bidders Page# _____

There shall be one (1) 2-way Motorola XLT5000 mobile radio installed, the head will be mounted on a swivel on the engine dog house. The radio unit will be mounted behind the officer's seat. Control Head Location to be determined and Pre-Construction Conference.

The radio shall include a single radio control head.

12.0 ** PUMP AND PLUMBING ****

12.1 PUMP

Exception:
Yes_____ No:_____

Bidders Page# _____

- **WATEROUS CSU-C20**
- **Rated @ 1500 G.P.M.**
- **SINGLE-STAGE**

  Note; Pump to be ordered as a 1750/2000 GPM pump but rerated to 1500GPM. The intent of this department is to extend the useful wear of a 1750GPM pump that is only rated to produce 1500GPM. Plumbing to remain to accommodate the flows of a 1500GPM Pump.

The pump shall be of single-stage construction and shall comply with all applicable requirements of the latest standards for automotive fire apparatus of the National Fire Protection Association, NFPA-1901 and shall have a rated capacity of 1500 gpm.

The pump must deliver the percentage of rated capacity at the pressure listed below:

- 100% of rated capacity at 150 P.S.I. net pump pressure
- 100% of rated capacity at 165 P.S.I. net pump pressure
- 70% of rated capacity at 200 P.S.I. net pump pressure
- 50% of rated capacity at 250 P.S.I. net pump pressure.

The pump shall be free from objectionable pulsation and vibration under all normal operating conditions.

12.2 PUMP CONSTRUCTION

Exception:
Yes_____ No:_____

Bidders Page# _____

The pump body shall be close-grained gray iron and must be horizontally split in two sections for easy removal of the impeller shaft assembly, and designed for complete servicing from the bottom of the truck without disturbing setting of the pump in the chassis or apparatus piping which is connected to the pump. Pump body halves shall be bolted together on a single horizontal face to minimize chance of leakage and facilitate reassemble.

Discharge manifold shall be cast as an integral part of the pump body assembly and shall provide at least three full 3-1/2 inch openings for ultimate flexibility in providing various discharge outlets for maximum efficiency, and shall be located as follows: one outlet on the right side of the pump body, one outlet on the left side of the pump body, and one outlet on top of the pump discharge manifold.

12.3 IMPELLER SHAFT

Exception:
Yes_____ No:_____

Bidders Page# _____

The Impeller shaft shall be heat-treated stainless steel, ground at all critical areas, and polished under the packing. An exclusive two-piece impeller shaft shall allow separation of the transmission from the pump without disassembling either component. This simplifies repair procedures, resulting in less down time.

12.4 PUMP IMPELLER

Exception:
Yes_____ No:_____

Bidders Page# _____

The impeller shall be bronze, accurately balanced (mechanically and hydraulically), of mixed flow design with reverse flow labyrinth-type wear rings that resist water bypass and loss of efficiency due to wear. The impeller shall have flame plated hubs to assure maximum pump life and efficiency despite the presence of abrasive particles, such as fine sand, in the water being pumped.

Wear rings shall be bronze, and shall be easily replaceable to restore original pump efficiency and eliminate the need for replacing the entire pump casing due to wear.

12.5 BEARINGS

Exception:
Yes_____ No:_____

Bidders Page# _____

Three deep-groove, anti-friction ball bearings shall be located outside the pumping chamber, which shall give support and proper alignment to the impeller shaft assembly. The bearings shall be oil or grease lubricated, completely separated from the water being pumped, and shall be protected by seal housings, flinger rings and oil seals.

12.6 MECHANICAL PUMP SEALS

Exception:
Yes_____ No:_____

Bidders Page# _____

Stuffing boxes shall be integral with the pump body and be equipped with self-adjusting, maintenance free mechanical shaft seals.

12.7 PUMP TRANSMISSION

Exception:
Yes_____ No:_____

Bidders Page# _____

The pump transmission shall be all aluminum **"C20"** model, rigidly attached to the pump body assembly and be of latest design incorporating a high strength involute tooth-form Hy-Vo chain drive. The driven sprockets shall be capable of operating at high speeds to provide smooth, quiet transfer of power. The shift engagement shall be accomplished by a free-sliding collar and shall incorporate an internal locking mechanism to insure that the collar shall be maintained in ROAD or PUMP position.

12.8 PUMP RATIO

Exception:
Yes_____ No:_____

Bidders Page# _____

The pump ratio shall be selected by the apparatus manufacturer to give maximum performance with the engine and transmission selected.

The manufacturer shall supply at time of delivery copies of the pump manufacturer's certification of hydrostatic testing, the engine manufacturer's current certified brake horsepower curve.

12.9 PUMP SHIFT

Exception:
Yes_____ No:_____

Bidders Page# _____

The pump shift shall be pneumatically operated and shall incorporate a standard automotive air valve shifting mechanism for ease of maintenance and parts availability. The pump shift valve shall be mounted in the cab and identified as PUMP SHIFT, and include shift instructions permanently inscribed on the pump shift switch plate. The in cab control valve shall include a detent lock to prevent accidental shifting. An option for a manual pump shift to be discussed at the pre-Construction Conference of the functionality of this option.

12.10 PUMP SHIFT INDICATORS LIGHT

Exception:
Yes_____ No:_____

Bidders Page# _____

The pump shift assembly shall incorporate an indicating light system which shall warn the operator if the shift to PUMP has not been completed and indicate when it has been completed. The switch that activates the lights must be mounted on the pump transmission and positioned so that the pump shift arm activates the switch only when the shift arm has completed its full travel into PUMP position.

12.11 TRANSMISSION LOCK

Exception:
Yes_____ No:_____

Bidders Page# _____

The automatic transmission furnished in the chassis shall have a lock-up assembly which brings the transmission to direct drive and prevents the transmission from shifting gears while in the pumping mode.

12.12 Operations Manual

Exception:
Yes_____ No:_____

There shall be two (2) Pump, Parts and Operation and Service Manuals supplied on CD's included with the apparatus.

Bidders Page# _____

12.13 BRAKING SYSTEM

Exception:
Yes_____ No:_____

A positive braking system shall be provided to prevent vehicle movement during pumping operations and both axles to serve as parking brakes. The air brakes furnished must satisfy this requirement.

Bidders Page# _____

12.14 MAIN PUMP MOUNTS

Exception:
Yes_____ No:_____

Extra heavy duty pump mounting brackets shall be furnished. These shall be bolted to the frame rails in such a position to perfectly align the pump so that the angular velocity of the drive line joints shall be the same on each end of the drive shaft. This shall assure full capacity performance with a minimum of vibration. Mounting hardware shall utilize Grade 8 bolts.

Bidders Page# _____

Pumps which are not mounted directly to the frame will not be considered. Under no circumstance shall the pump function as a frame cross member.

12.15 Pump Plumbing

Exception:
Yes_____ No:_____

All pump plumbing where vibration or chassis flexing may occur that may damage or loosen piping or where a coupling is required for servicing, the piping shall be equipped with Victaulic or rubber couplings.

Bidders Page# _____

13.0 *** PRESSURE CONTROL & ACCESSORIES *****

13.1 FIRE RESEARCH "IN-CONTROL" PRESSURE GOVERNOR

Exception:
Yes_____ No:_____

The apparatus shall be equipped with a Fire Research InControl series TGA300 pressure governor and monitoring display kit shall be installed. The kit shall include a control module, intake pressure sensor, discharge pressure sensor, and cables. The control module case shall be waterproof and have dimensions not to exceed 5 1/2" high by 10 1/2" wide by 2" deep. Inputs for monitored information shall be from a J1939 databus or independent sensors. Outputs for engine control shall be on the J1939 databus or engine specific wiring.

Bidders Page# _____

The following continuous displays shall be provided:

- Pump discharge; shown with four daylight bright LED digits more than 1/2" high
- Pump Intake; shown with four daylight bright LED digits more than 1/2" high
- Pressure / RPM setting; shown on a dot matrix message display
- Pressure and RPM operating mode LEDs
- Throttle ready LED
- Engine RPM; shown with four daylight bright LED digits more than 1/2" high
- Check engine and stop engine warning LEDs
- Oil pressure; shown on a dual color (green/red) LED bar graph display
- Engine coolant temperature; shown on a dual color (green/red) LED bar graph display

- Transmission Temperature: shown on a dual color (green/red) LED bar graph display
- Battery voltage; shown on a dual color (green/red) LED bar graph display.
- The dot-matrix message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator. All LED intensity shall be automatically adjusted for day and night time operation.

The program shall store the accumulated operating hours for the pump and engine to be displayed with the push of a button. It shall monitor inputs and support audible and visual warning alarms for the following conditions:

- High Battery Voltage
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Transmission Temperature
- Low Engine Oil Pressure
- High Engine Coolant Temperature
- Out of Water (visual alarm only)
- No Engine Response. (visual alarm only)

The program features shall be accessed via push buttons located on the front of the control panel. There shall be an USB port located at the rear of the control module to upload future firmware enhancements.

Inputs to the control panel from the pump discharge and intake pressure sensors shall be electrical. The discharge pressure display shall show pressures from 0 to 600 psi. The intake pressure display shall show pressures from -30 in. Hg to 600 psi.

The governor shall operate in two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes. A throttle ready LED shall light when the interlock signal is recognized. The governor shall start in pressure mode and set the engine RPM to idle. In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 psi. Other safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.

The pressure governor, monitoring and master pressure display shall be programmed to interface with a specific engine.

13.2 INTAKE RELIEF VALVE

Exception:
Yes_____ No:_____

Bidders Page# _____

A Waterous pilot operated intake relief valve shall be provided by the pump manufacture. The pilot valve shall be mounted in a position specified by the purchaser, and allow adjustment from 50 psi to 250 psi. The pilot operated intake relief valve shall allow full opening of the relief valve with a very small rise in intake pressure above the set pressure.

13.3 PUMP CERTIFICATION

Exception:
Yes_____ No:_____

Bidders Page# _____

The pump shall be third party performance tested to meet the requirements of NFPA-1901. To ensure top quality and integrity, the test company shall be Underwriters Laboratories (UL).

13.4 PRIMING PUMP

Exception:
Yes_____ No:_____

Bidders Page# _____

The priming pump shall be a 12-volt Waterous model VPO Oil-Less, positive displacement vane type, electrically driven. One priming control shall open the priming valve and start the priming motor. The primer shall be capable of priming without the use of primer oil. The primer shall be connected to the power source with a 300 amp fusible link.

A Vacuum Activated Priming valve - VAP, consists of a stainless steel valve stem, spring and pressure disk in a plastic valve body. A rubber disk forms the seat for the valve stem and also forms a seal between the priming valve inlet and the pump body. A rubber diaphragm forms a seal which allows the valve to open and close while isolating the interior of the priming valve from atmospheric pressure.

13.5 MASTER DRAIN VALVE

Exception:
Yes_____ No:_____

Bidders Page# _____

A master drain valve shall be provided and controlled at the lower portion of the driver's side pump panel. The valve shall be located in pump compartment lower than the main body and connected in such a manner as to allow complete water drainage of the pump body and all required accessories. Water shall be drained below the apparatus body and away from the pump operator.

13.6 MASTER DRAIN

Exception:
Yes_____ No:_____

Bidders Page# _____

The Waterous manifold drain assembly shall consist of a stainless steel plunger in a bronze body with multiple ports. The valve shall be designed so that pump discharge pressure prevents it from opening accidentally. The drain valve control shall be panel mounted, cable or rod operated and identified PUMP DRAIN.

13.7 INDIVIDUAL BLEEDERS AND DRAINS

Exception:
Yes_____ No:_____

Bidders Page# _____

All lines shall drain through the master drain valve or shall be equipped with individual drain valves, easily accessible and labeled.

One (1) individual "Innovative Control" lift up drain valve shall be furnished for each 1-1/2" or larger discharge port and each 2-1/2" gated auxiliary suction.

Drain/bleeder valves shall be located at the bottom of the side pump module panels.

All drains and bleeders shall discharge below the running boards.

13.8 SYNFLEX SUCTION, DISCHARGE, PRESSURE AND CONTROL LINES

Exception:
Yes_____ No:_____

Bidders Page# _____

Small lines within the pump enclosure shall be constructed from Synflex hose. Uses include, but are not limited to such lines as priming control, gauge lines, drain lines, air control valves, pump shift, supplemental cooling, foam flush and air bleeder valves. Lines to be protected where the contact sharp edges and appliances

13.9 ANODE BLOCKS

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) Waterous zinc anode blocks shall be provided and located on the suction side of the pump to protect the pump from corrosion.

The Anodes shall be painted Safety Yellow for identification purposes.

13.10 PUMP MODULE

Exception:
Yes_____ No:_____

Bidders Page# _____

The pump module shall be a self-supported structure mounted independently from the body and chassis cab. The design must allow normal frame deflection without imposing stress on the pump module structure or side running boards. The pump module shall be securely mounted to the chassis frame rails.

The pump module shall be a welded frame work utilizing structural aluminum components properly braced to withstand the rigors of chassis frame flex.

13.11 DUNNAGE AREA

Exception:
Yes_____ No:_____

Bidders Page# _____

A dunnage area shall be provided above the pump enclosure for equipment mounting and storage. This area shall be furnished with a removable 3/16" aluminum tread plate floor and shall be enclosed on the sides.
NOTE: The size of this storage area may vary when top mounted crosslays, booster reel(s), etc., are specified and located in this area.

14.0 *** PUMP SUCTIONS & AUXILIARY INLETS *****
14.1 SUCTION INLETS

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) 6" N.S.T. suction inlets shall be provided, one on the driver side pump panel and one on the officer side pump panel. A removable strainer shall be installed on each inlet.

14.2 PUMP SUCTION ENDS

Exception:
Yes_____ No:_____

Bidders Page# _____

The main pump suction inlets shall be furnished with a short suction end, terminating with only the suction threads protruding through the side panel to minimize the distance an exterior appliance protrudes beyond the pump panel.

A 6" NST chrome plated long handle pressure vented cap shall be installed on each main inlet of the pump.

14.3 AUXILIARY SIDE SUCTION(S)

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) 3" auxiliary suction shall be provided at the driver side pump panel, to the front of the main inlet. The 3" auxiliary suction shall terminate with a removable strainer, chrome plated 3" NST female swivel with a chrome plated plug and retaining chain.

An Akron Brass 3" Generation II Swing-Out™ Valve shall be provided for the driver's side front auxiliary suction. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

A 1/4 turn swing control handle shall be provided on the driver side front auxiliary suction valve.

A 3" NST x 2-1/2" NST reducing swivel with plug shall be furnished for the driver side front auxiliary suction.

All side gated inlet valves shall be recess mounted behind the side pump panels or body panels.

14.4 TANK TO PUMP

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) 4" tank to pump line shall be piped through the front bulkhead of the tank with a 90 degree elbow down into the tank sump. This line shall be plumbed directly into the rear of the pump suction manifold for maximum efficiency.

A check valve shall be provided to prevent accidental pressurization of the water tank through the pump connection. Connection from the valve to the tank shall be made by using a non-collapsible flexible rubber hose.

A Full Flow type Akron Brass 3" Generation II Swing-Out™ Valve shall be provided between the pump suction manifold and the water tank. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The tank to pump Akron ball valve shall be equipped with an Akron Brass Style 9323 Valve Controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one touch full open feature to operate the actuator. Two additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two additional displays to control one valve. The unit shall provide position indication through a full color backlit LCD display.

14.5 TANK FILL

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) 2" gated full flow pump to tank refill line controlled at the pump panel shall be provided. A deflector shield inside the tank shall be furnished. Tank fill plumbing shall utilize 2" high pressure hose for tank connection to accommodate flexing between components.

An Akron Brass 2" Generation II Swing-Out™ Valve shall be provided between the pump discharge manifold and the water tank. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The tank fill Akron ball valve shall be equipped with an Akron Brass Style 9323 Valve Controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one touch full open feature to operate the actuator. Two additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two additional displays to control one valve. The unit shall provide position indication through a full color backlit LCD display.

15.0 *** DISCHARGES & ACCESSORIES - SIDE MOUNT *****

15.1 DRIVER'S SIDE MAIN DISCHARGE #1

Exception:
Yes_____ No:_____

Bidders Page# _____

A discharge shall be provided and located at the driver's side pump panel. The driver's side discharges # 1 shall terminate with NST threads, through the left panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve shall be provided for the driver's side #1 discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The discharge valve shall be equipped with a removable 2 1/2" NST, 30 degree, and chrome plated elbow.

A 2 1/2" NST chrome plated pressure vented cap shall be installed on driver's side #1 discharge.

The driver's side # 1 discharge Akron ball valve shall be equipped with an Akron Brass Style 9323 Valve Controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one touch full open feature to operate the actuator. Two additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three preset locations that can be user set and easily recalled upon each use.

The unit shall be capable of being used in conjunction with at least two additional displays to control one valve. The unit shall provide position indication through a full color backlit LCD display.

The driver's side # 1 discharge shall be equipped with a 2 ½" diameter No Shok™ pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

Exception:
Yes_____ No:_____

Bidders Page# _____

15.2 DRIVER'S SIDE MAIN DISCHARGE #2

A discharge shall be provided and located at the driver's side pump panel. The driver's side discharges # 2 shall terminate with NST threads, through the left panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve shall be provided for the driver's side #2 discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seat.

The discharge valve shall be equipped with removable 2 1/2" NST. A 30 degree, chrome plated elbow shall be supplied.

A 2 1/2" NST chrome plated pressure vented cap shall be installed on driver's side #2 discharge.

The driver's side # 2 discharge Akron ball valve shall be equipped with an Akron Brass Style 9323 Valve Controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one touch full open feature to operate the actuator. Two additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two additional displays to control one valve. The unit shall provide position indication through a full color backlit LCD display.

The driver's side #2 discharge shall be equipped with a 2 ½" diameter Noshok pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

15.3 OFFICER'S SIDE MAIN DISCHARGE #1

Exception:
Yes_____ No:_____

Bidders Page# _____

A discharge shall be provided and located at the officer's side pump panel. The officer's side discharges #1 shall terminate with NST threads, through the officer's side panel above the main pump intake.

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass 3" Generation II Swing-Out™ Valve shall be provided for the officer's side #1discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The discharge valve shall be equipped with removable 3" NST. A 30 degree, chrome plated elbow shall be provided.

The officer's side # 1 discharge cap provided as standard equipment shall be deleted.

A 3" NSTF X 2-1/2" NSTM reducer with cap shall be provided on the officer's side # 1 discharge.

The officer's side # 1 discharge Akron ball valve shall be equipped with an Akron Brass Style 9323 Valve Controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one touch full open feature to operate the actuator. Two additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two additional displays to control one valve. The unit shall provide position indication through a full color backlit LCD display.

The officer's side # 1 discharge shall be equipped with a 2 ½" diameter Noshok pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

15.4 OFFICER'S SIDE MAIN DISCHARGE #2

Exception:
Yes_____ No:_____

Bidders Page# _____

A discharge shall be provided and located at the officer's side pump panel. The officer's side discharge #2 shall terminate with NST threads, through the officer's side panel above the main pump intake and be capable of providing 1000GPM

The main pump discharge shall be plumbed directly from the pump discharge manifold utilizing direct connect discharge valve flanges.

An Akron Brass 4" Heavy Duty Swing-Out™ Valve shall be provided for the officer's side #2 discharge. The valve shall have an all brass body with flow optimizing flat ball and dual polymer seats.

The discharge valve shall be equipped with a straight 4" NST adapter.

The officer's side #2 discharge cap provided as standard equipment shall be deleted.

A 4" NSTF X 5" Storz Kochek SKE-R 30° adapter with cap shall be provided on the officer's side #2 discharge.

The officer's side #2 discharge Akron ball valve shall be equipped with an Akron Brass Style 9323 Valve Controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one touch full open feature to operate the actuator. Two additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two additional displays to control one valve. The unit shall provide position indication through a full color backlit LCD display.

The officer's side #2 discharge shall be equipped with a 2 ½" diameter Noshok pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

15.5 DRIVER SIDE REAR DISCHARGE

Exception:
Yes_____ No:_____

Bidders Page# _____

A 3" NST rear discharge shall be provided at the rear of the vehicle, plumbed from the pump and capable of producing 1000GPM

The rear discharge shall terminate on the rear body panel, on the driver side of the body.

The driver side rear discharge shall be plumbed utilizing 3" schedule 10 stainless steel piping, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to the rear of the vehicle.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

An Akron Brass 3" Generation II Swing-Out™ Valve shall be provided for the driver side rear discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The driver side rear discharge Akron ball valve shall be equipped with an Akron Brass Style 9323 Valve Controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one touch full open feature to operate the actuator. Two additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two additional displays to control one valve. The unit shall provide position indication through a full color backlit LCD display.

The driver side rear discharge cap provided as standard equipment shall be deleted.

One (1) 3" NSTF X 2-1/2" NSTM reducer(s) w/cap shall be provided on the drivers' side rear discharge.

The driver side rear discharge shall be equipped with a 2 ½" diameter Noshok pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

15.6 DECK GUN DISCHARGE

Exception:
Yes_____ No:_____

Bidders Page# _____

A deck gun discharge shall be plumbed from the pump to an area on top of the vehicle. The deck gun piping shall be firmly supported and braced.

The deck gun discharge shall be located in the dunnage area above the pump module on the officer's side of the vehicle. A pedestal type, 1/4" steel plate support assembly shall be provided to stabilize deck gun plumbing below deck gun mount flange.

The deck gun discharge pipe shall terminate with 3" NPT threads.

To improve the operation range of the deck gun, the discharge pipe shall be outfitted with a TFT (18") Extend-A-Gun, part # XG18VL-PL. The Extend-A-Gun shall be wired to the hazard light on the cab dash and to include a warning feature to notify the operator of the extenda gun is not fully stowed.

The deck gun piping shall be designed so the overall height of the deck gun in the mounted/stowed position does not exceed the tallest point on the cab/body.

The deck gun discharge shall be plumbed utilizing 3" schedule 10 stainless steel piping, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to the deck gun location.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

An Akron Brass 3" Generation II Swing-Out™ Valve shall be provided for the deck gun discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The deck gun discharge Akron ball valve shall be equipped with an Akron Brass Style 9323 Valve Controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one touch full open feature to operate the actuator. Two additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two additional displays to control one valve. The unit shall provide position indication through a full color backlit LCD display.

The deck gun discharge shall be equipped with a 2 ½" diameter Noshok pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

Exception:
Yes_____ No:_____

Bidders Page# _____

15.7 TFT MANUAL DECK GUN

A TFT model #XFC-52 deck gun package which shall include the Safe-Tak ground base with dual 2-1/2" inlets, the Cross Fire monitor top, one (1) set of quad stack tips, one (1) Master Stream 1000 GPM. Automatic nozzle, stream straightener and a ground base compartment mounting bracket.

Exception:
Yes_____ No:_____

Bidders Page# _____

15.8 REDUNDANT DECK GUN PLUMBING

The deck gun shall be plumbed with redundant plumbing to bypass the foam manifold and allow the deck gun to achieve maximum flow.

The redundant deck gun plumbing shall be 3" schedule 10 stainless steel piping, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to the deck gun.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

An Akron Brass 3" Generation II Swing-Out™ Valve shall be provided for the redundant deck gun plumbing. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The redundant plumbing discharge Akron ball valve shall be equipped with an Akron Brass Style 9323 Valve Controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one touch full open feature to operate the actuator. Two additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two additional displays to control one valve. The unit shall provide position indication through a full color backlit LCD display.

The redundant plumbing discharge shall be equipped with a 2 ½" diameter Noshok pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

Exception:
Yes_____ No:_____

Bidders Page# _____

15.9 FRONT DISCHARGE

A 1 1/2" front #1 discharge shall be plumbed to the front bumper of the vehicle.

The front #1 discharge shall terminate on the top left side of the front bumper extension gravel shield with a chrome 90 Degree, 1 1/2" NSTM chicksan swivel adapter.

The front #1 discharge shall be plumbed utilizing 2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to the front of the vehicle.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability. Automatic discharge drains shall be provided at all low points in the plumbing.

An Akron Brass 2" Generation II Swing-Out™ Valve shall be provided for the front #1 discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The front #1 discharge Akron ball valve shall be equipped with an Akron Brass Style 9323 Valve Controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one touch full open feature to operate the actuator. Two additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two additional displays to control one valve. The unit shall provide position indication through a full color backlit LCD display.

A 1 1/2" NST chrome plated pressure vented cap shall be installed the front #1 discharge.

The front #1 discharge shall be equipped with a 2 ½" diameter Noshok pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

15.10 TRANSVERSE CROSSLAY COMPARTMENTS

Exception:
Yes_____ No:_____

Bidders Page# _____

The crosslay compartments will be **located at the rear of the pump module**, above the locker compartments.

15.11 HORIZONTAL CROSSLAY #1

Exception:
Yes_____ No:_____

Bidders Page# _____

A crosslay hose bed shall be provided and plumbed from the pump in a transverse design, located above the pump enclosure for quick attack deployment. The crosslay hose bed flooring shall be designed to be removable, constructed from brushed finish, perforated aluminum material.

Crosslay #1 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 1-3/4" fire hose.

Crosslay #1 hose bed shall be designed to accommodate the fire hose in a single stack configuration.

The crosslay discharge shall terminate through the side panel below the crosslay hosebed, on the driver's side, allowing the hose to be pre-connected. The crosslay discharge pipe shall be equipped with a chrome 1 1/2" NSTM straight adapter.

The crosslay #1 discharge shall be plumbed utilizing 2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to crosslay hose bed.

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

An Akron Bras

The crosslay #1 discharge Akron ball valve shall be equipped with an Akron Brass Style 9323 Valve Controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one touch full open feature to operate the actuator. Two additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two additional displays to control one valve. The unit shall provide position indication through a full color backlit LCD display.

The crosslay #1 discharge shall be equipped with a 2 ½" diameter Noshok pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

Exception:
Yes_____ No:_____

Bidders Page# _____

15.12 HORIZONTAL CROSSLAY #2

A crosslay hose bed shall be provided and plumbed from the pump in a transverse design, located above the pump enclosure for quick attack deployment. The crosslay hose bed flooring shall be designed to be removable, constructed from brushed finish, perforated aluminum material.

Crosslay #2 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 1-3/4" fire hose.

Crosslay #2 hose bed shall be designed to accommodate the fire hose in a single stack configuration.

The crosslay discharge shall terminate through the side panel below the crosslay hosebed, on the officer's side, allowing the hose to be pre-connected. The crosslay discharge pipe shall be equipped with a chrome 1 1/2" NSTM straight adapter.

The crosslay #2 discharge shall be plumbed utilizing 2" schedule 10 stainless steel piping and/or flexible hose, 45 degree elbows and a limited number of 90 degree sweep elbows in an assembly from the pump to crosslay hose bed. A minimum of

An Akron Brass 2" Generation II Swing-Out™ Valve shall be provided for the crosslay #2 discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The crosslay #2 discharge Akron ball valve shall be equipped with an Akron Brass Style 9323 Valve Controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one touch full open feature to operate the actuator. Two additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two additional displays to control one valve. The unit shall provide position indication through a full color backlit LCD display.

The crosslay #2 discharge shall be equipped with a 2 ½" diameter Noshok pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

Exception:
Yes_____ No:_____

Bidders Page# _____

15.13 HORIZONTAL CROSSLAY #3

A crosslay hose bed shall be provided and plumbed from the pump in a transverse design, located above the pump enclosure for quick attack deployment. The crosslay hose bed flooring shall be designed to be removable, constructed from brushed finish, perforated aluminum material.

Crosslay #3 shall be designed to have a minimum total capacity of 3.5 cubic feet as required by NFPA -1901 to accommodate a minimum of 200 feet of 2 1/2" fire hose.

Crosslay #3 hosebed shall be designed to accommodate the fire hose in a single stack configuration.

The crosslay discharge shall terminate through the side panel below the crosslay hosebed, on the driver's side, allowing the hose to be pre-connected. The crosslay discharge pipe shall be equipped with a chrome 2 1/2" NSTM straight adapter. The crosslay #

A minimum of one (1) grooved pipe coupling shall be furnished in this assembly to allow for flex and serviceability.

An Akron Brass 2 1/2" Generation II Swing-Out™ Valve shall be provided for the crosslay #3 discharge. The valve shall have an all brass body with flow optimizing stainless steel ball and dual polymer seats.

The crosslay #3 discharge Akron ball valve shall be equipped with an Akron Brass Style 9323 Valve Controller. The electric controls shall be of true position feedback design, requiring no clutches in the motor or current limiting. The unit shall be completely sealed with momentary open, close as well as an optional one touch full open feature to operate the actuator. Two additional buttons shall be available to be used for preset selection, preset activation and menu navigation. The controller shall have up to three preset locations that can be user set and easily recalled upon each use. The unit shall be capable of being used in conjunction with at least two additional displays to control one valve. The unit shall provide position indication through a full color backlit LCD display.

The crosslay #3 discharge shall be equipped with a 2 ½" diameter Noshok pressure gauge. The gauge shall have a rugged corrosion free stainless steel case and clear scratch resistant molded crystals with captive O-ring seals to ensure distortion free viewing and seal the gauge. The gauge shall be filled with a synthetic mixture to dampen shock and vibration, lubricate the internal mechanisms, prevent lens condensation and ensure proper operation from –40°F to +160°F.

The gauge shall exceed ANSI B40.1 Grade A requirements with an accuracy of +/- 1.5% full scale and include a size appropriate phosphorous bronze bourdon tube with a reinforced lap joint and large tube base to increase the tube life and gauge accuracy.

A polished chrome-plated stainless steel bezel shall be provided to prevent corrosion and protect the lens and gauge case. The gauge shall have black graphics on a white background.

15.14 SPARE SPEEDLAY TRAYS

An additional speedlay tray shall be provided to allow the fire department to pre-load a spare hose load for the desired speedlay. The tray shall be designed to have the same capacity of hose, matching the existing speedlay trays. The tray shall be shipped loose with the vehicle.

The crosslay hose bed floor will be approximately 42" above the side running board and **no more than 65" above ground level.**

None of the speedlays shall occur interference from use when the ladder rack is deployed.

15.15 PUMP ENCLOSURE HOSEBED HOSE RETENTION

Exception:
Yes_____ No:_____

Bidders Page# _____

A bi-folding 3/16" polished aluminum tread plate cross lay cover shall be provided. One (1) full length stainless steel hinge at the front of the cover and one (1) at the center located to rest on top of a cross lay partition for support.

Hinged brushed stainless steel flaps shall be provided at each side of the transverse cross lay compartment secured to the tread plate cross lay cover. Design will be made to match department's existing crosslay covers.

The crosslay end flap shall be red in color.

16.0 ****** CONCENTRATE PIPING & FOAM SYSTEM ******

16.1 FOAM PIPING

Exception:
Yes_____ No:_____

Bidders Page# _____

All foam concentrate plumbing from the tank or auxiliary foam inlet to the foam system components shall be stainless steel.

The foam system piping shall incorporate a check valve to prevent water from entering the foam tank; the discharge piping shall also include a check valve to prevent foam solution from back feeding into the discharge side of the pump. Individual discharge piping shall be as specified for each discharge.

The complete foam system shall be tested in accordance with NFPA-1901.

16.2 FOAMPRO FOAM INJECTION SYSTEM

Exception:
Yes_____ No:_____

Bidders Page# _____

A FoamPro™ model 2001, electronic, fully automatic, variable speed, direct injection, discharge side foam proportioning system shall be installed in the pumping system. The system shall be capable of handling Class "A" foam concentrates and most Class "B" foam concentrates. The foam proportioning operation shall be based on direct measurement of water flows, and remain consistent within the specified flows and pressures. System must be capable of delivering accuracy to within 3% of calibrated settings over the advertised operation range when installed according to factory standards. The system shall be equipped with a digital electronic control display suitable for installation on the pump panel. Incorporated within the control display shall be a microprocessor that receives input from the system flowmeter, while also monitoring foam concentrate pump output, comparing

values to ensure that the operator preset proportional amount of foam concentrate is injected into the discharge side of the fire pump.

A paddlewheel-type flowmeter shall be installed in the discharge or manifold system specified to be “foam capable”.

A Full flow check valve shall be provided to prevent foam contamination of fire pump and water tank or water contamination of foam tank.

A 12 or 24-volt electric motor drive positive displacement foam concentrate pump, rated up to 2.5 GPM (9.5 L/min) @ 150 psi with operating pressures up to 400 psi (27.6 BAR), shall be installed in a suitable, accessible location. The system shall draw a maximum of 40 amps @ 12 VDC or 21 amps @ 24 VDC. A pump motor electronic driver (mounted to the base of the pump) shall receive signals from the computer control display and power the 1/2 hp (0.40 Kw) electric motor directly coupled to the concentrate pump in a variable speed duty cycle to ensure that the correct proportion of concentrate preset by the pump operator is injected into the water stream.

The digital computer control display located on the pump operator's panel shall enable the pump operator to perform the following control and operation functions for the foam proportioning system:

Exception:
Yes_____ No:_____

Bidders Page# _____

- Provide push-button control of foam proportioning rates from 0.1% to 9.9%, in 0.1% increments
- Show current flow-per-minute of water
- Show total volume of water discharged during and after foam operations are completed
- Show total amount of foam concentrate consumed
- Simulate flow rates for manual operation
- Perform setup and diagnostic functions for the computer control microprocessor
- Flash a “low concentrate” warning when the foam concentrate tank(s) runs low
- Flash a “no concentrate” warning and shut the foam concentrate pump off, preventing damage to the pump, should the foam tank(s) empty

The digital computer control display shall interface with the options listed; provide dual foam calibration, and display separate totals for each foam concentrate used. If two foam tanks are required and piped to the foam concentrate pump, either an electric dual tank valve or the manual dual tank valve shall be provided.

Components of the complete proportioning system shall include:

Exception:
Yes_____ No:_____

Bidders Page# _____

- Operator control and display
- Paddlewheel flowmeter
- Pump and electric motor/motor driver
- Wiring harnesses
- Low-level tank switch (Switches)
- Electronic dual tank valve or manual dual tank valve (if more than one tank)
- Foam injection check valve
- Main waterway check valve
- Operation and Maintenance and Repair manual

Accurate concentration proportioning can be achieved, based on the following water flows:

- 85 GPM water 3.0% concentration
- 260 GPM water 1.0% concentration
- 520 GPM water 0.5% concentration
- 1300 GPM water 0.2% concentration

Note: Multiple discharges plumbed to this system may affect performance if the flow rates are exceeded by any one discharge or the totality of multiple discharges at one time!

The discharge piping shall be equipped with a properly sized flowmeter sensor, based on the systems capabilities.

The foam system shall be plumbed to the following discharge/s through the discharge piping or manifold system:

Crossley #1, #2 and #3 discharge.

Front Bumper Discharge

Drivers side Rear Discharge

Deck gun discharge.

The foam proportioning system shall be supplied from the foam concentrate storage tank/s. The tank/s shall be constructed of materials compatible with foam concentrates being used in the system. Tank capacity, venting, fill opening and foam outlet plumbing connections shall be in accordance with NFPA requirements. Foam tank lid shall be sealed and latched in accordance with NFPA standards. If required a provision shall be made for installation of low tank level sensors and routing of the wiring for the sensors.

16.3 ELECTRICAL DUAL TANK VALVE KIT

Exception:
Yes_____ No:_____

Bidders Page# _____

A FoamPro™ 3435-0132 dual tank selector kit shall be provided for Class "A" & Class "B" foam capabilities. This kit includes the electronic control circuits, switches, indicator lights, and operator's panel flip switch control for operation of two separate foam tanks and provided a 8 second mandatory water flush cycle between tank selection.

This item selection includes two (2) low level sensors.

16.4 SINGLE FOAMPRO™ POWER-FILLS

Exception:
Yes_____ No:_____

Bidders Page# _____

The apparatus shall be equipped with **a SINGLE** electronic, automatic, concentrate refill system. The system shall operate independently of the foam proportioner allowing simultaneous use. Refill operation shall not require apparatus or fire pump to be running. The system shall be capable of handling Class A or Class B foam concentrates, emulsifiers,

gels and decontamination concentrates. The apparatus shall be plumbed from the externally accessed intake/flush ports to the concentrate cell following manufacturer's recommendations. The external fill and flush connections to be quick-connect, cam-lock type. Internal piping to incorporate check valves to prevent back flow. Concentrate tank inlet shall be positioned to minimize agitation per manufacturers recommendations. The refill operation shall be based on direct measurement of concentrate level in tank. System must be capable of automatically stopping when cell is full and include a manual override feature. The system shall be equipped with an electronic control suitable for installation on the pump panel. Incorporated within the control shall be a microprocessor that receives input from the system while controlling foam concentrate pump output. An all bronze three-way valve shall be included to allow the operator to flush system after use. Valve control, intake and flush ports shall be located within corresponding panel plate.

The system shall enable the operator to perform the following control/operation functions and status indicators for the refill operation:

- Provide push-button start/stop control of foam refill
- Solid green light advises operator concentrate cell is full
- Flashing green indicates system is running
- Green light off, system off
- Allow override of "full tank" condition
- Provide a means to flush the pump and intake piping

System shall include a 12 or 24-volt electric motor driven, positive displacement concentrate pump. Pump shall deliver minimum flow of 10 GPM (37.8 L/min) @ 20 psi with all concentrates currently utilized in fire apparatus. Pump body to be of all bronze construction and other wetted components and piping to be constructed of non-corrosive materials. The system shall draw a maximum of 38 amps @ 12 VDC or 19 amps @ 24 VDC. A pump/motor solenoid (mounted to the base of the pump) shall receive signals from the computer control display and power the 1/2 hp (0.4 Kw) electric motor directly coupled to the concentrate pump. The system shall receive readings when the concentrate tank is full and stop operation to prevent overfill.

Components of the complete refill system shall include:

- Operator control and display with Weather-Pac connectors
- Refill/flush quick-connect cam-lock fittings and cap
- Check valves
- Pump/motor assembly and solenoid
- Strainer
- Tank level switch
- Three-way fill/flush valve
- Stainless steel pick-up wand and 6 feet of reinforced suction hose, 1 in diameter to allow maximum flow
- Panel placards
- Second foam tank manual fill only

16.5 FOAM TANK DRAIN

Exception:
Yes_____ No:_____

A 1" line from the foam tank shall be provided in order to drain foam from the tank. The line shall terminate behind the officer's side pump panel with a quarter turn drain valve.

Bidders Page# _____

17.0 ** PUMP PANEL & ACCESSORIES *****

17.1 PUMP PANEL - SIDE MOUNT

Exception:
Yes_____ No:_____

Bidders Page# _____

The pump operator's control panel shall be located on the driver side of the apparatus. The pump enclosure side panels shall be completely removable and designed for easy access and servicing.

17.2 PUMP PANEL MATERIAL

Exception:
Yes_____ No:_____

Bidders Page# _____

The left side operator's panel, gauge panel, right side pump panel and right side access door shall be fabricated from 12-gauge 304L stainless steel with a #4, (150/180 grit), standard brushed finish.

17.3 HINGED GAUGE PANEL

Exception:
Yes_____ No:_____

Bidders Page# _____

A full width, vertically hinged gauge access panel shall be provided at the operator's position. Chrome plated positive locks shall be provided along with chain holders to prevent the front of the gauge panel from coming in contact with other panels when open.

The lower driver's side pump panel shall be vertically hinged, to provide complete access to the pump and plumbing on the driver side of the pump enclosure. The panels shall be equipped with stainless steel hinges and secured with push type locks to hold the panels closed. The drains located on the driver's side panel shall be fastened to the lower panel, which shall be stationary.

17.4 VERTICALLY HINGED, SPLIT PUMP PANEL OFFICER SIDE

Exception:
Yes_____ No:_____

Bidders Page# _____

The officer's side pump panel shall be split, vertically hinged, to provide complete access to the pump and plumbing on the officer side of the pump enclosure. The panels shall be equipped with stainless steel hinges and secured with push type locks to hold the panels closed. The drains located on the officer's side panel shall be fastened to the lower panel, which shall be stationary.

17.5 PANEL FASTENERS

Exception:
Yes_____ No:_____

Bidders Page# _____

Stainless steel machine screws and lock washers shall be used to hold these panels in position. The panels shall be easily removable to provide complete access to the pump for major service. Fasteners shall be nutsert or ASE fastener attached. Sheet metal or self-tapping screws are unacceptable.

17.6 CAPS AND ADAPTERS SAFETY TETHER

Exception:
Yes_____ No:_____

All applicable discharge and suction caps, plugs and adapters shall be equipped with tether cables and secured to the vehicle.

Bidders Page# _____

17.7 PUMP PANEL TRIM PLATES

Exception:
Yes_____ No:_____

A high polished trim plate shall be provided around each discharge port and suction inlet opening to allow accessibility to the respective valve for service and repairs.

Bidders Page# _____

17.8 DISCHARGE GAUGE TRIM BEZELS

Exception:
Yes_____ No:_____

Each individual discharge gauge shall be installed into a decorative chrome-plated mounting bezel that incorporates valve-identifying verbiage and color labels.

Bidders Page# _____

17.9 COLOR CODED IDENTIFICATION TAGS

Exception:
Yes_____ No:_____

Color coded identification tags shall be provided for all gauges, controls, connections, switches, inlets and outlets.

Bidders Page# _____

17.10 PUMP OPERATOR'S PANEL LIGHT SHIELD AND STEP

Exception:
Yes_____ No:_____

The pump operator’s panel shall be equipped with a light shield/step that shall be full width of the control panel, and shall be positioned to cover the lights and prevent glare. The light shield shall be fabricated from aluminum tread plate, which shall also serve as a step. The step shall be a minimum of 8" deep X the width of the pump panel.

Bidders Page# _____

The light shield shall be equipped with the following lights:

- Two (2) 20" Amdor Luma Bar H2O super bright led strip lights.

One (1) light under the operator's panel light shield shall be actuated when fire pump is engaged in addition to the pump engaged light.

17.11 OFFICER SIDE PUMP PANEL LIGHT SHIELD AND STEP

Exception:
Yes_____ No:_____

The officer side pump panel shall be equipped with a light shield/step that shall be full width of the panel, and shall be positioned to cover the lights and prevent glare. The light shield shall be fabricated from aluminum tread plate, which shall also serve as a step. The step shall be a minimum of 8" deep X the width of the pump panel.

Bidders Page# _____

The light shield shall be equipped with the following lights:

- Two (2) 20" Amdor Luma Bar H2O super bright led strip lights.

The lights shall be switched with the operator panel lights.

17.12 PUMP OPERATOR'S PANEL

Exception:
Yes_____ No:_____

Bidders Page# _____

Particular attention is to be given to functional arrangement of all controls. The pump operator's panel shall accommodate the following:

- Hinged gauge panel
- Water tank fill valve
- Auxiliary suction valve control
- All discharge valve controls
- Auxiliary engine cooler controls
- Water tank suction control valve
- Pump primer valve
- Engine throttle control
- Master compound vacuum gauge
- Master pressure gauge
- Individual discharge gauges
- Pump shift engaged indicator light
- Water tank water level indicator
- Engine tachometer
- Engine oil pressure gauge with audible alarm
- Engine water temperature gauge with audible alarm
- Low voltage light and audible alarm
- Pump panel light switch
- Speed counter (Underwriters)
- Pump performance plate (Underwriters)
- Pump serial No. plate
- Master pump drain valve
- Individual drains
- Voltmeter
- Air inlet/outlet at lower driver side panel
- Pump panel air horn actuation button labeled "EVACUATION" in white letters with a red background.
- 5/8" Pump cooler with control valve (By-pass Line).
- Air outlet chuck (right side panel).
- Fire Research #TGA300 "IN CONTROL" pressure governor control.

17.13 PUMP TEST PORTS

Exception:
Yes_____ No:_____

Bidders Page# _____

The pump panel shall be equipped with Vacuum & Pressure test plugs to allow for test equipment to monitor pump pressure and vacuum levels. Chrome plugs and labels shall be provided for the test ports.

17.14 MASTER GAUGES

Exception:
Yes_____ No:_____

One (1) 4" diameter pressure gauge (labeled: "PRESSURE") and one (1) 4" diameter compound vacuum gauge (labeled: "INTAKE") shall be provided. The master gauges shall be "No Shok", silicone filled. The gauge faces shall be white with black numerals.

Bidders Page# _____

17.15 PRESSURE & COMPOUND GAUGE RANGES

Exception:
Yes_____ No:_____

All applicable pressure gauges shall have a range of 0 - 400 P.S.I., and the compound gauge shall have a range of -30" - 0 - 400 P.S.I.

Bidders Page# _____

17.16 ENGINE COOLER

Exception:
Yes_____ No:_____

An auxiliary cooler or heat exchanger shall be installed in the engine compartment between the engine and the chassis radiator. The cooler shall permit the use of water from the pump for cooling system. The cooling shall be done without mixing engine and pump water and shall have a control valve..

Bidders Page# _____

17.17 PUMP OVERHEAT INDICATOR

Exception:
Yes_____ No:_____

An MC Products pump overheat indicator with buzzer shall be provided on the pump operator's panel to provide a visual flashing signal before a critical pump temperature is reached. The indicator shall be set to warn at +/- 125°F.

Bidders Page# _____

17.18 TANK LEVEL GAUGE

Exception:
Yes_____ No:_____

A Fire Research, model #WLA200-A00, "TANKVISION" gauge that shows the actual volume of water in the tank shall be provided on the pump operator's panel. The "TANKVISION" gauge is designed for both ease of operation and installation. The "TANKVISION" gauge utilizes ultra bright LEDs for sunlight readability and also uses 2 specially designed wide-viewing lens for 180° of clear viewing. The "TANKVISION" gauge utilizes a pressure sender to measure the liquid volume. The gauge shall be equipped with a self-calibration feature that allows the LED's TANKVISION gauge to be used on tanks of different shapes and sizes.

Bidders Page# _____

Features:

- Flashes warning when the volume is less than 25%. Rapid down scrolling LED's alert the operator when the tank is almost empty. Remote audio warning available.
- One size fits all'. The self-calibration feature allows for easy calibration of any shape or size tank.
- Multiple displays are possible with a single sender through the FRC data bus.
- Rugged waterproof cast aluminum housing.
- No fitting needed for poly tank.
- Special fittings available for other tank materials.
- Connector disconnects at back of display.

The gauge shall use a pressure transducer installed near the bottom of the water tank to determine the correct volume in the tank.

A Fire Research model #WLA290, remote relay module shall be provided to provide outputs for large indicator lights on the side of the vehicle.

17.19 LARGE LIGHT WATER LEVEL GAUGE, EACH SIDE OF CAB

Exception:
Yes_____ No:_____

Bidders Page# _____

A large light water level gauge system shall be provided on both sides of the cab. Each side shall have a Whelen model PSTANK, LED strip light, surface mounted, behind the rear crew door above the handrail.

The strip light shall indicate the following water levels:

- Green LED cluster Full tank
- Blue LED cluster 3/4 tank
- Amber LED cluster 1/2 tank
- Red LED cluster 1/4 tank

The red LED's shall burn steady to indicate 1/4 tank and shall start to flash when the water level drops below 1/4 tank. To prevent distraction to drivers, this tank level gauge shall be wired to display only when the park brake is engaged.

17.20 FOAM TANK LEVEL GAUGE - FOAM TANK "A"

Exception:
Yes_____ No:_____

Bidders Page# _____

A Fire Research, model #WLA260-A00, "TANKVISION" gauge that shows the actual volume of foam in the tank shall be provided on the pump operator's panel. The "TANKVISION" gauge is designed for both ease of operation and installation. The "TANKVISION" gauge utilizes ultra bright LED's for sunlight readability and also uses 2 specially designed wide-viewing lens for 180° of clear viewing. The "TANKVISION" gauge utilizes a pressure sender to measure the liquid volume. The gauge shall be equipped self-calibration feature allows the TANKVISION gauge to be used on tanks of different shapes and sizes.

The gauge shall use a pressure transducer installed near the bottom of the foam tank to determine the correct volume in the tank.

17.21 FOAM TANK LEVEL GAUGE - FOAM TANK "B"

Exception:
Yes_____ No:_____

Bidders Page# _____

A Fire Research, model #WLA270-A00, "TANKVISION" gauge that shows the actual volume of foam in the tank shall be provided on the pump operator's panel. The "TANKVISION" gauge is designed for both ease of operation and installation. The "TANKVISION" gauge utilizes ultra bright LED's for sunlight readability and also uses 2 specially designed wide-viewing lens for 180° of clear viewing. The "TANKVISION" gauge utilizes a pressure sender to measure the liquid volume. The gauge shall be equipped self-calibration feature allows the TANKVISION gauge to be used on tanks of different shapes and sizes.

The gauge shall use a pressure transducer installed near the bottom of the foam tank to determine the correct volume in the tank.

17.22 MICROPHONE BOX/SPEAKER GRILLE

Exception:
Yes_____ No:_____

Bidders Page# _____

A stainless steel 12" wide x 8" high x 6" deep microphone box with an integral speaker grille and spring loaded door shall be provided.

The microphone box shall be recessed in an applicable location determined at the Pre-construction meeting and may be deleted if we utilize a wireless intercom system.

17.23 WATER TANK

Exception:
Yes_____ No:_____

Bidders Page# _____

The water tank shall have a capacity of 500 gallons, constructed from Poly material.

17.24 FOAM TANK "A"

Exception:
Yes_____ No:_____

Bidders Page# _____

In addition to the water capacity of the tank, a 30 gallon integral foam storage area shall be built into the water tank. The foam tank shall have a latched fill tower, properly labeled as the foam fill point. A valved drain shall be provided.

17.25 FOAM TANK "B"

Exception:
Yes_____ No:_____

Bidders Page# _____

In addition to the water capacity of the tank, a 20 gallon integral foam storage area shall be built into the water tank. The foam tank shall have a latched fill tower, properly labeled as the foam fill point. A valved drain shall be provided.

17.26 TANK CONSTRUCTION

Exception:
Yes_____ No:_____

Bidders Page# _____

The Poly water tank shall be constructed of PT3 polypropylene material. This material shall be a non-corrosive stress relieved thermoplastic and UV stabilized for maximum protection. Tank shell thickness may vary depending on the application and may range from 1/2 to 1" as required. Internal baffles are generally 3/8" in thickness.

The tank shall be of a specific configuration and is so designed to be completely independent of the body and compartments. Joints and seams shall be fused using nitrogen gas as required and tested for maximum strength and integrity. The tank construction shall include PolyProSeal technology wherein a sealant shall be installed between the plastic components prior to being fusion welded. This sealing method will provide a liquid barrier offering leak protection in the event of a weld compromise. The top of the booster tank is fitted with removable lifting assembly designed to facilitate tank removal. The transverse and longitudinal swash partitions shall be manufactured of a minimum of 3/8" PT3 polypropylene. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions interlock with one another and are completely fused to each other as well as to the walls of the tank. All partitions and spacing shall comply with NFPA 1901. The walls shall be welded to the floor of the tank providing maximum strength as part of the tank's unique Full Floor Design. Tolerances in design allow for a maximum variation of 1/8" on all dimensions.

17.27 CAPACITY CERTIFICATION

Exception:
Yes_____ No:_____

Bidders Page# _____

All tanks shall be tested and certified as to capacity on a calibrated and certified tilting scale. Each tank shall be weighed empty and full to provide precise fluid capacity. Each Poly-Tank's III is delivered with a Certificate of Capacity delineating the weight empty and full and the resultant capacity based on weight.

17.28 TANKNOLOGY TAG

Exception:
Yes_____ No:_____

Bidders Page# _____

A tag shall be installed on the apparatus in a convenient location and contain pertinent information including a QR code readable by commercially available smart phones. The information contained on the tag shall include the capacity of the water and foam (s), the maximum fill and pressure rates, the serial number of the tank, the date of manufacture, the tank manufacturer, and contact information. The QR code will allow the user to connect with the tank manufacturer for additional information and assistance.

17.29 ISO CERTIFICATION

Exception:
Yes_____ No:_____

Bidders Page# _____

The tank must be designed and fabricated by a tank manufacturer that is ISO 9001:2000 certified in each of its locations. The ISO certification must be to the current standard in effect at the time of the design and fabrication of the tank.

17.30 TANK LID

Exception:
Yes_____ No:_____

Bidders Page# _____

The tank cover shall be constructed of 1/2" thick PT3 polypropylene and UV stabilized, to incorporate a multi-piece locking design, which allows for individual removal and inspection if necessary. The tank cover(s) shall be flush or recessed 3/8" from the top of the tank and shall be fused to the tank walls and longitudinal partitions for maximum integrity. Each one of the covers shall have hold downs consisting of 2" minimum polypropylene dowels spaced a maximum of 40" apart. These dowels shall extend through the covers and will assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowers shall accommodate the necessary lifting hardware.

17.31 TANK FILL TOWER

Exception:
Yes_____ No:_____

Bidders Page# _____

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" PT3 polypropylene and shall be a minimum dimension of 8" x 8" outer perimeter. The fill tower shall be blue in color indicating that it is a water-only fill tower. The tower shall be located in the left front corner of the tank unless otherwise specified by the tank manufacturer to the purchaser. The tower shall have a 1/4" thick removable polypropylene screen and a PT3 polypropylene hinged cover. The capacity of the tank shall be engraved on the top of the fill tower lid. Inside the fill tower there shall be a combination vent/overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe with a minimum I.D. of that is designed to run through the tank, and shall be piped to discharge water behind the rear wheels as required in NFPA 1901 so as to not interfere with rear tire traction.

17.32 OVERFLOW AND VENT PIPE

Exception:
Yes_____ No:_____

Bidders Page# _____

The fill tower shall be fitted with an integral 4" I.D. schedule 40 P.V.C. combination overflow/vent pipe running from the fill tower through the tank to a 4" coupling flush mounted into the bottom of the tank to allow water to overflow behind the chassis rear axle.

17.33 TANK SUMP

Exception:
Yes_____ No:_____

Bidders Page# _____

The tank sump shall be a minimum of 10" wide x 10" long x 3" deep. An anti-swirl plate shall be mounted inside the sump, approximately 1" above the bottom of the sump.

17.34 TANK SUMP CONNECTION

Exception:
Yes_____ No:_____

Bidders Page# _____

The front bulkhead of the water tank shall be fitted with one (1) tank sump.

A 3" drain plug shall be provided.

17.35 OUTLETS

Exception:
Yes_____ No:_____

Bidders Page# _____

There shall be two (2) standard tank outlets; one for tank-to-pump suction line which shall be a minimum of 4" coupling and one for a tank fill line which shall be a minimum of a 2" N.P.T. coupling. All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank.

17.36 WATER TANK MOUNTING

Exception:
Yes_____ No:_____

Bidders Page# _____

The tank shall rest on the body cross members spaced a maximum of 22" apart, and shall be insulated from these cross members with a minimum of 3/8" nylon webbing or 1/2" rubber, 2-1/2" wide. The tank shall sit cradle-mounted using four (4) corner angles of 6 x 6 x 4 x 0.250 welded directly to the body cross members. The angles shall keep the tank from shifting left to right or front to rear. The tank is designed on the free-floating suspension principle and shall not require the use of hold downs. The tank shall be completely removable without disturbing or dismantling the apparatus body structure. The body or hose bed cross braces shall act as water tank retainers.

17.37 LOCKER COMPARTMENT

Exception:
Yes_____ No:_____

Bidders Page# _____

A locker compartment shall be provided **at the rear** of the pump enclosure, one (1) each side measuring 16" wide x 21" high x approximately 28" deep with a door opening of 10" wide x 20" high.

The outer edge of the compartment will be flush with the outer edge of the running board.

Each compartment shall be equipped with an access panel located on the rear wall to provide access to the area behind the locker compartment.

18.0 APPARATUS BODY DESIGN CONSTRUCTION

Exception:
Yes_____ No:_____

Bidders Page# _____

The body side and compartment assemblies shall be designed and assembled to provide maximum strength and durability under all operating conditions.

Special attention shall be taken to minimize corrosion on all fabricated parts and structural members of the body. All bolt-on components shall be provided with a dissimilar metals isolation barrier to prevent electric corrosion. The body design shall also incorporate removable panels to access spring hangers, rear body mounts and fuel tank sending units.

The body assembly shall be an all-welded configuration. The body shall be completely isolated from the cab and pump module structure.

Dimensions used in this specification shall be the general outer dimension taken from a typical line diagram of the apparatus. These dimensions shall not take into account items like material thickness, access panels, doors, and other installed options.

18.1 COMPARTMENT TOPS

Exception:
Yes_____ No:_____

Bidders Page# _____

Compartment ceilings shall be a fully welded design as part of the body construction process. Compartment designs that do not have a welded in ceiling and utilize the stepping surface overlay as the ceiling shall not be acceptable.

The top of the welded in compartment ceiling shall be overlaid with aluminum treadplate to provide an NFPA compliant stepping surface.

18.2 COMPARTMENT DRIP MOLDING

Exception:
Yes_____ No:_____

Bidders Page# _____

Compartment tops over all side compartments shall have a flange formed to provide protection against water runoff. For bodies with wide hosebeds or coffin compartments a secondary extruded drop molding shall be provided above the compartments.

18.3 REAR BODY PANEL

Exception:
Yes_____ No:_____

Bidders Page# _____

The rear body panel shall extend the full width between the body side compartments. This panel shall be full height from the rear step to the hose bed floor. No part of the rear panel shall be attached to the booster tank. The rear body panel material shall be brushed stainless as standard. If Chevron striping is specified for the rear of the body should then be smooth aluminum where the Chevron Stripping is utilized.

18.4 BODY AND COMPARTMENT FABRICATION - 3/16" ALUMINUM

Exception:
Yes_____ No:_____

Bidders Page# _____

All compartment panels and body side sheets shall be fabricated entirely of 3/16" aluminum (5052-H32). Each side compartment assembly shall be both plug welded and stitch welded to ensure proper weld penetration on all panels while avoiding the possible warping caused by a full seam weld. The side compartments shall be welded on a fixture to ensure true body dimensions of all door openings. The side compartments and body side panels are then set into a body squaring fixture where the super structure is installed and the entire body is aligned to be completely symmetrical.

The super structure is then welded to the compartment side panels and reinforcement plates are inserted which allows the compartment panels to become an integral component of the body support structure. A full seam weld shall not be used due to the applied heat which shall distort sheet metal and remove the protective coating from the perimeter of the welded area. All seams shall be caulked prior to finish paint to ensure proper compartment seal. An Open compartment warning indicator shall be provided that notifies the operator of an open compartment for any compartment on the proposed vehicle.

Exception:
Yes_____ No:_____

18.5 SUB STRUCTURE - ALUMINUM

Bidders Page# _____

The body sub structure shall be an all welded configuration utilizing a combination of 3" x 1-1/2" 6061-T6 thick walled structural tubing and 6061 structural channel.

This structure shall be designed to totally support the full length and width of the body and shall be welded to the body side compartments by use of reinforcement plates to incorporate the compartments into an integral part of the body weldment.

The sub structure shall be bolted to the sides of the chassis frame at four (4) points. The two (2) forward mounting points shall utilize a spring mount to help isolate the body from chassis deflection.

This design shall provide storage capacity in each side compartment for a minimum of 500 lbs. of equipment, and a minimum of 1000 lbs. of equipment in the rear step compartment.

Exception:
Yes_____ No:_____

18.6 FIRE BODY WIDTH

Bidders Page# _____

The fire body shall be 100" wide to provide the maximum amount of usable hose bed and compartment space. The side body compartments shall be between 26" - 29" deep in any full depth areas, and 14" deep in any split depth areas.

Exception:
Yes_____ No:_____

18.7 BODY FENDER

Bidders Page# _____

The body fender shall be 64" long, this shall allow for the suspension and related components to be contained within the fender, preventing any intrusion into the body compartment storage area. Bodies with notches in the front and/or rear compartment for suspension components are not acceptable.

Exception:
Yes_____ No:_____

18.8 DRIVER SIDE - FRONT SECTION OF FENDER

Bidders Page# _____

A storage compartment shall be inserted into the fender to provide a storage area for three (3) customer supplied SCBA cylinders (or fire extinguishers of similar size). The storage area shall be sized as tall and wide as possible in the fender (minimum of 14" wide x 15" tall with an angled floor by fender radius), and shall be 26" deep. The compartment shall have a non-abrasive lined cradle storage area for each of the three (3) devices.

This storage compartment shall provide a minimum of 2.3 cubic feet of storage space.

18.9 DRIVER SIDE - REAR SECTION OF FENDER

Exception:
Yes_____ No:_____

Bidders Page# _____

A storage compartment shall be inserted into the fender to provide a storage area for two (2) customer supplied SCBA cylinders (or fire extinguishers of similar size). The storage area shall be sized as tall and wide as possible in the fender (minimum of 15" wide x 7-3/4" tall), and shall be 26" deep. The compartment shall have a non-abrasive lined cradle storage area for each of the devices.

This storage compartment shall provide a minimum of 1.6 cubic feet of storage space.

18.10 OFFICER SIDE - FRONT SECTION OF FENDER

Exception:
Yes_____ No:_____

Bidders Page# _____

A storage compartment shall be inserted into the fender to provide a storage area for three (3) customer supplied SCBA cylinders (or fire extinguishers of similar size). The storage area shall be sized as tall and wide as possible in the fender (minimum of 14" wide x 15" tall with an angled floor by fender radius), and shall be 26" deep. The compartment shall have a non-abrasive lined cradle storage area for each of the three (3) devices.

This storage compartment shall provide a minimum of 2.3 cubic feet of storage space.

18.11 OFFICER SIDE - REAR SECTION OF FENDER

Exception:
Yes_____ No:_____

Bidders Page# _____

A storage compartment shall be inserted into the fender to provide a storage area for three (3) customer supplied SCBA cylinders (or fire extinguishers of similar size). The storage area shall be sized as tall and wide as possible in the fender (minimum of 14" wide x 15" tall with an angled floor by fender radius), and shall be 26" deep. The compartment shall have a non-abrasive lined cradle storage area for each of the three (3) devices.

This storage compartment shall provide a minimum of 2.3 cubic feet of storage space.

18.12 FENDER STORAGE DOORS

Exception:
Yes_____ No:_____

Bidders Page# _____

The fender storage area(s) shall be enclosed by a hinged door fabricated from the same material as the primary body construction, and painted the primary body color. The back side of the door shall have a section of nylatron installed to protect the door surface from the items stored in the compartment. Each door shall be tied into the compartment door ajar/do not move apparatus warning system.

18.13 DRIVER SIDE BODY COMPARTMENTATION

Exception:
Yes_____ No:_____

Bidders Page# _____

One full height/**full depth** compartment shall be provided forward of the rear wheels. The compartment dimensions shall be 35" wide x 68" tall x 29" deep **full height**.

One high side compartment shall be provided above the rear wheels. The compartment dimensions shall be 64" wide x 37" high x 14" deep.

One full height/split depth compartment shall be provided behind the rear wheels. The compartment dimensions shall be 56" wide x 68" tall x 29" deep in the lower 30" tall area, and 14" deep in the upper 38" tall area.

The driver side compartments shall provide approximately 95 cubic feet of storage space.

18.14 VERTICAL DIVIDER, LITTLE GIANT

Exception:
Yes_____ No:_____

Bidders Page# _____

Full height, fixed mounted, vertical compartment divider shall be fabricated from 3/16" brushed aluminum material. The divider shall extend the full depth of the specified compartment from the floor to the compartment ceiling.

Full height, vertical divider shall be located in the front of the L-1 compartment to separate the Little Giant ladder from the remainder of the compartment.

18.15 OFFICER SIDE BODY COMPARTMENTATION

Exception:
Yes_____ No:_____

Bidders Page# _____

One full height/**full depth** compartment shall be provided forward of the rear wheels. The compartment dimensions shall be 35" wide x 68" tall x 29" deep **full height**.

One high side compartment shall be provided above the rear wheels. The compartment dimensions shall be 64" wide x 37" high x 14" deep. Compartment to have a swing out aluminum peg board to mount hand tools and struts.

One full height/split depth compartment shall be provided behind the rear wheels. The compartment dimensions shall be 56" wide x 68" tall x 29" deep in the lower 30" tall area, and 14" deep in the upper 38" tall area. Compartment to have three adjustable shelves. It shall also have one full width slide out shelf.

The officer side compartments shall provide approximately 95 cubic feet of storage space.

18.16 REAR STEP COMPARTMENT

Exception:
Yes_____ No:_____

Bidders Page# _____

An equipment storage compartment shall be provided on the rear of the body at the rear step area. The rear step compartment shall be 42" Wide x 30" High x 29" Deep.

The rear step compartment shall provide approximately 21 cubic feet of storage space.

The rear step compartment shall have full side panels which shall isolate this storage area from the side body compartments.

The rear step compartment shall be equipped with a rollup style door.

18.17 REAR STEP, SLIDE OUT 24"

Exception:
Yes_____ No:_____

Bidders Page# _____

The rear step shall be fabricated from 3/16" polished aluminum tread plate, and shall be rigidly reinforced. The rear step shall extend 4" past the rear edge of the body, when in the stowed position and 24" in the extended position, and shall be 100" wide. The bumper will have two (2) positions, stowed and fully extended. All slide out steps shall have an indicator notifying the operator that the step is not stowed before moving vehicle

The rear edge of the step shall be designed to accommodate the rear clearance lights, recessed for protection in the step reinforcement channel. The step treadplate overlay shall be bolted to the step frame for ease of replacement.

18.18 HOSE BED (72" WIDE)

Exception:
Yes_____ No:_____

Bidders Page# _____

The hose bed shall be located directly above the booster tank and shall be free from all sharp objects such as bolts, nuts, etc., to avoid damage to fire hose.

For added strength, the hose bed side walls shall be approximately 2" thick, this shall provide a mounting surface for devices like warning lights and scene lights. The inner hosebed side walls shall be brushed aluminum panels, which shall prevent damage to painted surfaces when deploying hose. The front wall shall be flanged inward 2" with a 1" downward return to provide additional rigidity to the front wall.

18.19 HOSE BED CAPACITY

Exception:
Yes_____ No:_____

Bidders Page# _____

The hose bed shall be designed with enough storage capacity to carry the following customer specified hose load:

150' of 2-1/2" DJ fire hose
200' of 1-3/4" DJ fire hose
200' of 1-3/4" DJ fire hose
200' of 2-1/2" DJ fire hose
200' of 2-1/2" DJ fire hose
1000' of 5" high pressure supply hose

The hose load will be arranged from left to right in the hose bed.

18.20 HOSE BED FLOORING

Exception:
Yes_____ No:_____

Bidders Page# _____

Flooring to be constructed from extruded aluminum and be properly spaced for ventilation. The flooring shall be smooth and free from sharp edges to avoid hose damage. The hose bed floor shall be removable to provide access to inner body framework.

18.21 HOSE BED PARTITION

Exception:
Yes_____ No:_____

Bidders Page# _____

Five (5) fully adjustable 1/4", aluminum hose bed partition shall be provided. Partition shall be easily adjustable by means of channels located at the front and rear of the hose bed. Partition shall be removable for access to the booster tank. Dividers to be cut back 8” to allow for appliances attached to the hoses. There shall be spacer blocks between the dividers to keep them from moving once in place.

18.22 HOSE BED COVER, ALUMINUM TREAD PLATE

Exception:
Yes_____ No:_____

Bidders Page# _____

An aluminum tread plate hose bed cover shall be mounted to the side body flanges utilizing a full length stainless steel hinge on each side. The cover shall be constructed of 3/16” aluminum tread plate with aluminum extrusion frame. The cover shall be supported by a rear "A" frame structure which shall be 1-1/2” higher than the side body flanges to allow water runoff. An integral center drain channel will allow water runoff to drain out the back on not on the hose load.

Handles shall be provided at the front and rear of the hose bed cover for lifting. Gas springs and cables shall be provided at the front to hold open the doors.

Switches shall be provided on each side cover, which shall be tied into the "Do Not Move Apparatus When Light Is On" warning light in the cab.

A hinged access door shall be provided over the water tank fill tower area to allow access to the fill tower when the hose bed cover is in the closed position. The access door shall be hinged to the front to help prevent the door from opening when the apparatus is in motion.

There shall be four (4) LED loading lights to illuminate the hose bed to aid in hose loading.

18.23 VINYL FLAPS

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) vinyl flaps at the rear of the tread plate hose bed cover. They shall be secured to the hose bed cover with quarter turn fasteners and to the rear body with bungee cords.

The Hypalon material shall be black in color.

18.24 HOSE BED COVER LETTERING

Exception:
Yes_____ No:_____

Bidders Page# _____

Material backed, 7-1/2" tall, Scotchlite™ Letters shall be sewn onto the hose bed cover rear flap(s).

The color of the letters shall be **WHITE**.

The lettering shall read **CPFR**.

One (1) hat section storage area shall be provided, constructed from 1/8" aluminum tread plate, located on top of the driver side tread plate hose bed cover. The storage area shall accommodate storage of one (1) backboard. Approximate dimensions shall be 3" high x 20" wide x 78" long.

18.25 COMPARTMENT DOORS

Exception:
Yes_____ No:_____

Bidders Page# _____

The compartment doors shall be flush type with the outer skin fabricated from 3/16" (5052 H32) aluminum. The door skin shall have a formed flange on one (1) side used as a hinge mounting flange. The door skin shall have reinforcing channels welded internally which accommodate the inner door pan mounting.

The 2" thick compartment doors shall reduce the overall specified compartment depth by 2".

All horizontally hinged doors shall be 1" thick to provide additional compartment storage area. The 1" thick horizontally hinged doors shall reduce the overall specified compartment depth by 1-1/4".

Each inner pan shall be constructed from 1/8" aluminum material, which shall be provided with a brushed finish. The brushed finish shall allow the fire department to remove scratches from the inner door pan with sand paper or scuff pad. Each inner door pan shall be fastened to the door frame channels to provide a smooth, snag-free inner door surface. The inner door pan on the running board compartments shall enclose the latch and reinforcements completely. The pan shall be easily removable to access the enclosed latch mechanism.

18.26 COMPARTMENT DOOR HINGES

Exception:
Yes_____ No:_____

Bidders Page# _____

Hinges shall be full length polished stainless steel piano type. The hinges shall be mounted with stainless steel hardware.

18.27 COMPARTMENT DOOR SEALS

Exception:
Yes_____ No:_____

Bidders Page# _____

Enclosed body compartment doors shall be equipped with a closed cell gasket. The gasket material shall be EPDM to provide a gasket resistant to weather, temperature extremes, and aging.

18.28 COMPARTMENT DOOR LATCHES – ROTARY WITH D-RINGS

Exception:
Yes_____ No:_____

Bidders Page# _____

Externally latched body doors shall be equipped with stainless steel D-ring handles and Eberhard 206 locking latches.

Rotary door latches shall be provided for all full height body doors, which shall incorporate rotary latches at the top and bottom of all externally latched single or double doors. Linkages shall be provided between the actuation handle and the latch mechanisms.

The blank door of a double door configuration shall have rotary latches at the top and bottom of each door with the latch release lever accessible thru the door frame, which eliminates the need to reach inside the compartment to release the door. Linkages shall be provided between the actuation handle and the latch mechanisms.

Horizontally hinged doors shall be equipped with a single rotary door latch.

18.30 COMPARTMENT DOOR STAY ARMS

Exception:
Yes_____ No:_____

Eberhard gas shock type door hold open devices shall be provided for each vertically and horizontally hinged door.

Bidders Page# _____

18.31 SWEEP-OUT COMPARTMENT FLOORS

Exception:
Yes_____ No:_____

Bidders Page# _____

Compartment floors shall be welded to the compartment walls and have a sweep out design for easy cleaning.

Compartments with hinged doors shall have the door opening flanges bend down to produce the sweep-out design.

Compartments with roll-up style doors shall have the external floor flange stepped down, 1/2" high x 2" deep, to produce a sealing surface for the roll-up doors below the compartment floor. The sweep out design shall also permit easy cleaning.

18.32 STAINLESS STEEL SILL PROTECTORS

Exception:
Yes_____ No:_____

A 90° angle door sill protector, fabricated from 18 gauge brushed finish stainless steel shall be installed on the bottom external edge of each high side compartment door opening to protect this area from paint chipping.

Bidders Page# _____

18.33 COATED FASTENERS

Exception:
Yes_____ No:_____

Bidders Page# _____

All exterior fasteners shall be coated stainless steel screws. Screw threads shall be coated with reusable, self-locking, sealing material to provide vibration resistance. Screw heads shall be coated with a sealing element to prevent galvanic corrosion between dissimilar metals. Non-coated screws shall only be provided as part of vendor supplied component installations.

18.34 COMPARTMENT LOUVERS

Exception:
Yes_____ No:_____

Ventilation between compartments to atmosphere shall be provided and located to avoid water entry into compartments.

Bidders Page# _____

18.35 ACCESS PANELS

Exception:
Yes_____ No:_____

Removable access panels shall be provided (if applicable) to access fuel tank sender, electrical junction compartment and rear body mounts.

Bidders Page# _____

Protective panels shall be located in the rear compartments providing access to the lights and associated wiring. The covers shall also serve as protective covers to prevent inadvertent damage to lights or wiring from tools or equipment located in the compartment.

18.36 BODY PROTECTION PANELS

Exception:
Yes_____ No:_____

Bidders Page# _____

The front face of the side compartments, next to the driver and officer pump panels shall be overlaid with full height **brushed stainless steel** protection panels. The overlays shall cover the front face of the compartments only, they shall not wrap around to the door opening.

18.35 BODY SCUFF PANEL

Exception:
Yes_____ No:_____

Bidders Page# _____

A polished stainless steel scuff plate shall be installed on the rear body corners. The scuff plate shall extend the full height of the body corner panel.

18.36 REAR STANCHIONS - CAST ALUMINUM

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) Cast Products model #LB0029-1, polished stanchion brackets with wiring protectors, shall be provided at the rear of the body for upper rear warning light mounting, one (1) each side. These brackets shall be bolted to the sides of the body to minimize rear vehicle height.

18.37 BODY RUB RAILS (BRUSHED STAINLESS STEEL)

Exception:
Yes_____ No:_____

Bidders Page# _____

Sacrificial, brushed finish, stainless steel rub rails shall be mounted at the base of the body, extend outward a minimum 3/4", downward 2" and flange inward 1". The rub rails shall extend the full length of the main body and wrap around the rear body corners. Rub rails shall be designed to bolt to the body from the bottom side of the compartment area, so as not to damage the body side panels on initial impact and to provide for ease of replacement.

18.38 RUNNING BOARD STEPS

Exception:
Yes_____ No:_____

Bidders Page# _____

The driver and officer running board steps shall be fabricated of 3/16" polished aluminum tread plate. The outside edge on each step shall be fabricated with a double break, return flange. The steps shall be rigidly reinforced with a heavy duty support structure. The running boards shall not form any part of the compartment design, and shall be bolted into place with a minimum 1/2" clearance gap between any panels to facilitate water runoff.

18.39 OFFICER SIDE RUNNING BOARD STORAGE WELL - FLOATING

Exception:
Yes_____ No:_____

Bidders Page# _____

A floating storage well, constructed of 1/8" aluminum, shall be recessed into the officer's side running board. The storage well shall measure 9" deep x 9" wide x as long as possible between the running board support members. Drain holes shall be located in the bottom corners to allow water to drain from the storage well. The front and rear bottom corners of the well shall have an angled face to help the well slide up if it strikes an object. The entire well shall be a "floating" style that can easily shift up if an object is struck.

The officer's side running board hose well shall be furnished with Velcro straps to secure the hose stored in the well. The straps shall be attached to each side of the hose well with stainless steel footman loops.

The officer's side storage well shall be equipped with Turtle Tile material to provide drainage and ventilation of equipment in storage well.

18.40 DRIVER SIDE RUNNING BOARD STORAGE WELL - FLOATING

Exception:
Yes_____ No:_____

Bidders Page# _____

A floating storage well, constructed of 1/8" aluminum, shall be recessed into the driver's side running board. The storage well shall measure 9" deep x 9" wide x as long as possible between the running board support members. Drain holes shall be located in the bottom corners to allow water to drain from the storage well. The front and rear bottom corners of the well shall have an angled face to help the well slide up if it strikes an object. The entire well shall be a "floating" style that can easily shift up if an object is struck.

The driver's side running board hose well shall be furnished with Velcro straps to secure the hose stored in the well. The straps shall be attached to each side of the hose well with stainless steel footman loops.

The driver's side storage well shall be equipped with Turtle Tile material to provide drainage and ventilation of equipment in storage well.

18.41 REAR STEP, SLIDE OUT 24"

Exception:
Yes_____ No:_____

Bidders Page# _____

The rear step shall be fabricated from 3/16" polished aluminum tread plate, and shall be rigidly reinforced. The rear step shall extend 4" past the rear edge of the body, when in the stowed position and 24" in the extended position, and shall be 100" wide. The bumper will have two (2) positions, stowed and fully extended.

The rear edge of the step shall be designed to accommodate the rear clearance lights, recessed for protection in the step reinforcement channel. The step treadplate overlay shall be bolted to the step frame for ease of replacement.

18.42 INTERMEDIATE REAR STEP, RECESSED

Exception:
Yes_____ No:_____

Bidders Page# _____

An eight (8) inch **recessed** intermediate rear step, fabricated from 3/16" aluminum tread plate, shall be installed at the rear of the hose bed opening. The step shall be a minimum of 8" deep x full width of the **hose bed**. And have an oblong grab point along the step with a grab rail underneath.

18.43 GRAB RAILS

Exception:
Yes_____ No:_____

Bidders Page# _____

All hand rails shall be 1-1/4" outer diameter, knurled bright anodized aluminum extrusion, designed to meet NFPA 1901 requirements.

Molded gaskets shall be installed between the handrail stanchion castings and body surfaces to prevent electrolytic reaction between dissimilar metals and to protect paint.

18.44 GRAB RAIL LOCATIONS:

Exception:
Yes_____ No:_____

Bidders Page# _____

Grab rails shall be provided at the following specified locations. Additional grab rails shall be provided adjacent to any additional steps specified to comply with NFPA 1901.

Two (2) vertical rails shall be mounted on the rear edge of the beavertails, one (1) each side.

One (1) horizontal, full width handrail shall be installed on the rear, below the level of the hose bed.

18.45 FOLDING STEP(S) - BODY FRONT DRIVER SIDE

Exception:
Yes_____ No:_____

Bidders Page# _____

Large folding step(s), made of high strength die cast aluminum, with a textured chrome plate finish, shall be provided on driver side body front to provide NFPA compliant access (maximum 18" height between steps) to an upper horizontal walking surface (compartment cap, dunnage area, fabricated step, or upper body compartments).

18.46 FOLDING STEP(S)- BODY REAR DRIVER SIDE

Exception:
Yes_____ No:_____

Bidders Page# _____

Large folding step(s), made of high strength die cast aluminum, with a textured chrome plate finish, shall be provided on driver side body rear to provide NFPA compliant access (maximum 18" height between steps) to an upper horizontal walking surface (compartment cap, dunnage area, fabricated step, or upper body compartments).

18.47 FOLDING STEP(S) - BODY REAR OFFICER SIDE

Exception:
Yes_____ No:_____

Bidders Page# _____

Large folding step(s), made of high strength die cast aluminum, with a textured chrome plate finish, shall be provided on officer side body rear to provide NFPA compliant access (maximum 18" height between steps) to an upper horizontal walking surface (compartment cap, dunnage area, fabricated step, or upper body compartments).

18.48 SAFETY SIGN(S) AT REAR STEP AND CROSS WALKWAY(S)

Exception:
Yes_____ No:_____

Bidders Page# _____

Safety sign(s) shall be located on the vehicle at the rear step, and at any cross walkway(s), to warn personnel that riding in or on these areas while the vehicle is in motion is prohibited.

18.49 REAR WHEEL WELL LINERS

Exception:
Yes_____ No:_____

Bidders Page# _____

Fully removable, one piece, bolt-in, stainless steel rear wheel well liner and fenderette will be provided. The wheel well liners will be natural metal finish and will protect the front and rear compartments and main body supports from damage. Wheel well liners and fenderettes which are welded in place or are only partially removable shall not be considered.

18.50 REAR MUD FLAPS

Exception:
Yes_____ No:_____

Heavy duty mud flaps shall be provided behind the rear wheels.

Bidders Page# _____

18.51 REAR TOW DEVICE

Exception:
Yes_____ No:_____

A tow bar shall be installed under the tailboard at center of truck.

Bidders Page# _____

Tow bar shall be fabricated of 1.00" CRS bar rolled into a 3.00" radius.

Tow bar assembly shall be constructed of .38" structural angle. When force is applied to the bar, it shall be transmitted to the frame rail.

Tow bar assembly shall be designed and positioned to allow up to a 30-degree upward angled pull of 17,000 lb., or a 20,000 lb. straight horizontal pull in line with the centerline of the vehicle.

The tow device will match the Department supplied pictures.

18.52 REAR TOW EYES

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) chrome plated tow eyes shall be furnished on the rear of the vehicle, extending through the rear body panel. The tow eyes shall be made from plate steel and shall be bolted directly to the chassis frame rails with grade 8 bolts. The tow eyes shall be smooth and free from sharp edges, and have a minimum eyelet hole of 2-1/2".

18.53 POWER VENT SYSTEM - BODY

Exception:
Yes_____ No:_____

Bidders Page# _____

A SABRE-VENT 120-volt AC blower system producing up to 400 CFM thru 1-1/2" perforated PVC piping, closed loop system shall be installed and routed to each body compartments. The power vent shall have a timer and operate two (2) hours on and four (4) hours off. The power to the vent system shall be supplied by the shoreline 120 volt inlet.

The SABRE-VENT shall be installed and routed to seven (7) body compartments.

The duct work for the vent system shall be installed toward the upper outer area of the compartment to help conceal the duct work.

19.0 ** COMPARTMENT ACCESSORIES ****

19.1 ADJUSTABLE SHELVING

Exception:
Yes_____ No:_____

Bidders Page# _____

Compartment shelving shall be constructed of 3/16" brush finish aluminum with a **2" 45-degree upward bend at front** and 90-degree bend at the rear and side supports. Shelving shall be vertically adjustable with spring nuts in aluminum strut channel.

Adjustable shelves shall be located as follows:

Ten (10) adjustable shelf(s) shall be provided and mounted as directed by the fire department.

19.2 500 POUND FLOOR MOUNTED ROLL OUT TRAYS

Exception:
Yes_____ No:_____

Bidders Page# _____

Floor mounted roll-out trays shall consist of heavy duty, roller bearing slide tracks with an end load rating of 500 pounds, securely fastened to the compartment floor. The tray shall be fabricated from 3/16" brushed aluminum with a minimum 2" high flange on each of the four sides to assist in retaining the equipment stored on each tray. The slide tracks shall have a 100% extension, allowing the tray to extend out of the compartment completely.

The 500 pound floor mounted roll out trays shall be located as follows:

One (1) in the officer side front compartment
One (1) in the driver side rear compartment
One (1) in the officer side rear compartment
One (1) in the rear step compartment

19.3 VERTICAL DIVIDER

Exception:
Yes_____ No:_____

Bidders Page# _____

A fixed mounted, vertical divider shall be fabricated from 3/16" brushed aluminum material. The divider shall extend the full depth of the specified tray. The height of the divider to be determined at the pre-construction conference.

Divider shall be located as follows:

One (1) fixed divider shall be located in the roll-out tray located on the R-1 compartment.

19.4 SWING OUT TOOL BOARDS

Exception:
Yes_____ No:_____

Bidders Page# _____

The tool boards shall be constructed of 3/16" smooth aluminum allowing mounting of equipment on the interior and exterior of the tool board. The tool boards shall be installed with a Performance Advantage Company PM-1000 Swing-Out Module Kit. Aluminum angles shall attach the hinges to Unistrut tracking to allow depth adjustments. A heavy duty thumb latch shall be provided to secure the tool boards in the closed position.

Swing out tool boards shall be located as follows:
One (1) in the officer side over the wheel high side compartment

19.5 LONG HANDLED TOOL STORAGE MODULE

Exception:
Yes_____ No:_____

Bidders Page# _____

A long handled tool storage compartment will be located in the rearward section of the dunnage area, over the top of the crosslay compartments. Compartment will be approximately 12”W x 10”H x 75”L. A fixed divider will be located 6” off the front wall of the compartment. Each compartment door will be provided with D-ring handle. This compartment will be designed to be weather tight.

The doors will be wired to the compartment door open system.

19.6 ALUMINUM STRUT CHANNEL FOR FUTURE SHELVING

Exception:
Yes_____ No:_____

Bidders Page# _____

Four (4) Aluminum Strut Channels shall be installed for future shelving installation in the following compartments:

Driver over the wheel high side compartment

Officer over the wheel high side compartment

20.0 ****120/240 VOLT A.C. ELECTRICAL AND GENERATOR SECTION **
20.1 120/240 VOLT ELECTRICAL SYSTEM TESTING

Exception:
Yes_____ No:_____

Bidders Page# _____

All line voltage wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900 volts for one minute. The test shall be conducted between live parts and the neutral conductor and between live parts and the vehicle frame with any switches in the circuits closed. The test shall be conducted after all bodywork has been completed. The dielectric tester shall have a minimum 500 VA transformer with a sinusoidal output voltage that can be verified.

Electrical polarity verification shall be made of all permanently wired equipment and receptacles to determine that connections have been properly made.

20.2 OPERATIONAL TESTING

Exception:
Yes_____ No:_____

Bidders Page# _____

The apparatus manufacturer shall perform the following operation test and shall certify that the power source and any devices that are attached to the line voltage electrical system are properly connected and in working order.

The generator shall be started from a cold start condition and the line voltage electrical system shall be loaded to 100 percent of the nameplate voltage rating.

The following items shall be monitored and documented every 15 minutes:

- The cranking time until the generator starts and runs.
- The voltage, frequency, and amperes at continuous full rated load.
- The generator oil pressure, water temperature, transmission temperature, hydraulic temperature, and the battery rate charge, as applicable.
- The ambient temperature and altitude.

The generator shall operate at 100 percent of its nameplate wattage for a minimum of two (2) hours.

20.3 GENERATOR

Exception:
Yes_____ No:_____

Bidders Page# _____

A 5,000 watt, Onan Model #HDKBC 5.0, 60 HZ quiet diesel generator shall be provided and shall require a two pole 25 amp main breaker to be installed in the load center. The generator dimensions are 34.5" long x 22.9" deep and 20.3" high. Generator to be installed so removable of the generator for service and repairs is easily accomplished.

The generator shall be equipped with the following:

- 12 volt chassis power source
- Chassis fuel hook-up with in-line shutoff valve
- Muffler with exhaust discharge below fire body
- Oil drain run below fire body
- Low oil shutdown protection
- Liquid cooled engine
- A generator instrument control panel shall be provided near the breaker box to monitor the generator output. The control panel shall include one (1) voltmeter, one (1) frequency meter, one (1) hour meter and two (2) ammeters.

20.4 120/240 VOLT WIRING

Exception:
Yes_____ No:_____

Bidders Page# _____

The generator output conductors shall be 8 gauge and the output conductors shall be routed through non-metallic conduit 3/4" in diameter.

20.5 REMOTE OIL DRAIN KIT

Exception:
Yes_____ No:_____

Bidders Page# _____

A remote oil drain kit shall be installed for oil removal below the fire body.

20.6 REMOTE ELECTRIC START

Exception:
Yes_____ No:_____

Bidders Page# _____

An electric remote start kit shall be provided and located at the driver's side pump panel and specific location as directed by the fire department.

20.7 GENERATOR WARRANTY

Exception:
Yes_____ No:_____

Bidders Page# _____

The specified generator shall have a two (2) year or two thousand (2000) hour warranty as provided by the generator manufacturer. A copy of the generator warranty shall be provided at time of delivery.

20.8 GENERATOR LOCATION

Exception:
Yes_____ No:_____

Bidders Page# _____

The generator shall be mounted above the pump enclosure on the officer side.

Locating the generator greater than 144" from the main breaker panel may require the installation of an additional power disconnecting means.

20.9 120/240 VOLT LOAD CENTER

Exception:
Yes_____ No:_____

Bidders Page# _____

The generator output line conductors shall be wired from the generator output connections to a Square D, model #QO112L125G breaker panel. The breaker panel shall be equipped with a properly sized main breaker using two (2) of the twelve (12) spaces which leaves a total of ten (10) available spaces.

The generator output conductors shall be sized to 115% of the main breaker rating and shall be installed as indicated in the wiring section.

Four (4) appropriately sized, 120 volt, GFI ground fault circuit breakers, shall be installed in place of standard circuit breakers.

The breaker panel shall be located on the rear wall of the driver side front compartment.

20.10 120/240 VOLT WIRING METHODS

Exception:
Yes_____ No:_____

Bidders Page# _____

Wiring/conduit shall not be attached to any chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components or low voltage wiring.

All wiring shall be installed at a minimum of 12 inches away from any exhaust piping and a minimum of 6 inches from any fuel lines.

All wiring shall be securely clamped within 6 inches of any junction box and at a minimum of every 24 inches of run. All supports shall be of nonmetallic material or corrosion protected metal. All supports shall not cut or abrade conduit or cable and shall be mechanically fastened to the vehicle.

All power supply assembly conductors, including neutral and grounding conductors, shall have an equivalent amperage rating and shall be sized to carry not less than 115% of the main breaker rating.

All Type SO or Type SEO cable not installed in a compartment shall be installed in wire loom. Where Type SO or Type SEO cable penetrates a metal surface, a rubber or plastic grommet or bushing shall be provided.

The installation of all 120/240 wiring shall meet the current NFPA-1901 Standards.

20.11 120/240 VOLT WIRING IDENTIFICATION

Exception:
Yes_____ No:_____

Bidders Page# _____

All line voltage conductors located inside the main breaker panel box shall be individually and permanently identified. When pre-wiring for future power wiring installations, the non-terminated ends shall be labeled showing function and wire size.

20.12 120/240 VOLT GROUNDING

Exception:
Yes_____ No:_____

Bidders Page# _____

The neutral conductor of the power source shall be bonded to the vehicle fame only at the power source.

The grounded current carrying conductor (neutral) shall be insulated from the equipment grounding conductors and from the equipment enclosures and other grounded parts. The neutral conductor shall be colored white or gray.

In addition to the bonding required for the lower voltage return current, each body and driving/crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor. The conductor shall have a minimum amperage rating of 115 percent of the name plate current rating of the power source specification label.

20.13 120/240 VOLT CIRCUIT BREAKER / RECEPTACLE INSTALLATION

Exception:
Yes_____ No:_____

Bidders Page# _____

The system shall be installed by highly qualified electrical technicians to assure the required level of safety and protection to the fire apparatus operators. When multiple circuit are required, the circuits shall be wired to the breaker panel in a staggered configuration to minimize electrical loads on each breaker or generator (leg) circuit. The wiring, electrical fixtures and components shall be to the highest industry quality standards available on the domestic market. The equipment shall be the type as designed for mobile type installations subject to vibration, moisture and severe continuous usage.

20.14 120/240 VOLT RECEPTACLE INSTALLATIONS

Exception:
Yes_____ No:_____

Bidders Page# _____

Any receptacle installed in a wet location must be a minimum of 24 inches above the ground and provided with an approved wet location cover. Wet receptacles may not be mounted at more than 45 degrees from vertical, nor can they be mounted in a face-up position.

Three (3) 120 volt, NEMA L5-15, 15 amp, duplex twist-lock receptacle(s) with a grey thermoplastic, corrosion resistant, weatherproof cover shall be installed as directed by the fire department.

The receptacle(s) shall require 15 amp, 120 volt circuit breaker(s) to be installed in the load center to properly protect the three (3) receptacle(s).

One (1) 120 volt, NEMA 5-20, 20 amp, duplex straight blade receptacle with a grey thermoplastic, corrosion resistant, weatherproof cover shall be installed at each side of the of the rear wheel well panels. (Total of two (2))

Each receptacle shall require one (1) 20 amp, 120 volt circuit breaker to be installed in the load center, for a total of two (2) breakers.

20.15 ELECTRIC CORD REEL (220 VOLT)

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) Hannay Model #ECR-1618-17-18, with 4 conductor collector assembly for 240 volts, with electric rewind cord reel shall be provided and wired to the breaker panel. The reel shall be securely mounted and equipped with a rewind control adjacent to the reel.

The cord reel shall be mounted above the pump enclosure on the officer side. Finale location to be determined at Pre-Con.

The circuit breaker used to protect any device attached to the cord reel shall be sized to the smallest electrical connection used.

One (1) reel rewind switch(s) shall be provided within easy access by the operator. Location to be determined at Pre-Con.

One (1) Hannay 4-way stainless steel roller assembly shall be provided. The roller assembly opening shall be the full width of the reel drum.

One (1) cable ball stop(s) shall be installed on the cable to keep the end from passing through the roller assembly.

20.16 ELECTRIC CABLE

Exception:
Yes_____ No:_____

Bidders Page# _____

One hundred fifty (150) feet of Type SO black 10/4 heavy duty electric cable, wired for 120 volt, shall be provided on the cord reel.

One (1) NEMA L5-20 Twistlock™, 20 amp, three prong twist-lock receptacle shall be provided on the end of the cable.

20.17 AKRON JUNCTION BOX

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) four (4) outlet Akron junction box with one (1) NEMA 15/20A straight blade receptacle and three (3) NEMA L5-15R twist-lock receptacles with 6" pigtail with a NEMA L5-20 twist-lock plug shall be provided.

The Akron junction box shall be wired such that the four (4) outlets provide 120 VAC.

One (1) holder constructed from 16 gauge brushed stainless steel shall be provided for each cord reel(s) junction box. The location of the holder shall be adjacent to the cord reel roller assembly or as directed by the fire department.

20.18 LIGHTING (TRI-POD) - LEFT AND RIGHT REAR CORNERS OF THE CAB

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) Whelen, model #PFP2AP1 150 watt LED telescoping lights shall be provided. Each light shall be mounted to a Whelen tripod lighting stand that shall be provided and installed on the **exterior left and right rear corners of the cab**. The lighting stand shall be UL listed for fire service use. The tripod stand shall have a 30" body with 20" legs and the raising

and lowering of the light shall be locked in place by a twist lock tightening mechanism. The use of a knob or latch to release the pole in order to raise and lower the telescoping portion of the pole shall not be accepted.

The lights shall be mounted on the body as directed by the fire department, one (1) each side. Wiring used for the lighting shall be a minimum of 16 gauge three (3) wire cable that is properly supported and protected from damage.

The tripod lights shall be equipped with a pig tail cord equipped with an L5-15 120V plug and a weatherproof "on-off" switch on the light head.

One (1) 120V, L5-15 amp receptacle shall be provided and installed near the mounting position of each tripod light for a total of two (2) receptacles. Both receptacles shall require one (1) 15 amp, 120V circuit breaker to be installed in the load center. The tripod lights shall be equipped with a pig tail cord equipped with appropriate 120V plug and a weatherproof "on-off" switch on the light head.

The tri-pod lights shall be controlled from the following location(s):

- Pump panel, with 12 volt switch

Exception:
Yes_____ No:_____

Bidders Page# _____

21.1 LADDER STORAGE RACK - DUAL ARM (OFFICER SIDE)

A hydraulically actuated, dual arm, swing down ladder rack, for use with ladders that have a combined weight of approximately 300 lbs., depending on boom length, shall be provided. The ladders shall be stored horizontally, directly above the officer side compartments.

The actuator s

activate when the rack is in motion, the warning alarm shall be installed on the officer side rear body panel. An interlock system shall be provided whereas if any hinged compartment door on the right side of the body is open, the rack shall not operate.

A flashing warning light labeled: "Do Not Move Apparatus When Light Is On", shall be provided on the cab dash to indicate when the rack is not in the raised travel position.

The forward and rear ends of the ladder rack shall be equipped with red, flashing lights to warn when the rack is down. These lights shall automatically activate when the rack is not locked in the travel position.

Pneumatic power clamps lock booms in the stored position that shall automatically engage when the ladder rack is nested.

Deployment of the ladder rack from stowed position to ground level shall be within 7 seconds.

21.2 LADDER CLARIFICATION

Exception:
Yes_____ No:_____

The NFPA-1901 required ground ladders shall be furnished with the completed unit.

Bidders Page# _____

21.3 GROUND LADDERS

Exception:
Yes_____ No:_____

The following Duo-Safety ground ladder complement shall be provided:

Bidders Page# _____

- One (1) Duo-Safety 900A 24', aluminum, two (2) section extension ladder shall be provided.
- One (1) Duo-Safety 775A 14', aluminum, straight roof ladder with folding hooks shall be provided.
- One (1) Duo-Safety 585A 10', folding, aluminum, attic ladder shall be provided.
- One (1) Little Giant model 10102, 17” ladder system with mounting hardware shall be provided. This ladder has an extension height ranging from 9'-0" to 15'-0"

22.0 ADDITIONAL ITEMS SUPPLIED WITH THE VEHICLE

Exception:
Yes_____ No:_____

- 1 – Two (2) Oz of touch up paint for each color
- 1 -Bag of assorted stainless steel nuts and bolts and shelf track spring nuts

Bidders Page# _____

22.1 LOOSE EQUIPMENT

Exception:
Yes_____ No:_____

The following items shall be provided and shipped loose with the completed apparatus at the time of delivery:

Bidders Page# _____

22.2 WHEEL CHOCKS

Exception:
Yes_____ No:_____

Two (2) ZICO #SAC-44 folding wheel chocks shall be mounted forward of the rear wheels on the driver side below the side running board compartments.

Bidders Page# _____

23.0** PAINT SECTION ****
23.1 PAINT, PREPARATION AND FINISH

Exception:
Yes_____ No:_____

The PPG Delta, Low V.O.C., polyurethane finishing system, or equal, shall be utilized. A "Clear Coat" paint finish shall be supplied to provide greater protection to the quality of the exterior paint finish.

Bidders Page# _____

All removable items, such as brackets, compartment doors, etc. shall be painted separately to insure finish paint behind mounted items. All compartment unwelded seams exposed to high moisture environments shall be sealed using permanent pliable caulking prior to finish paint.

Exception:
Yes_____ No:_____

Bidders Page# _____

23.2 BODY PRIMER & PREPARATION

All exposed welds shall be ground smooth for final finishing of areas to be painted. The compartments and doors are totally degreased and phosphatized. After final body work is completed, grinding (36 and 80 grit), and finish sanding shall be used in preparation for priming.

Exception:
Yes_____ No:_____

Bidders Page# _____

23.3 BODY FINISH PAINT

The body shall be finish sanded and prepared for final paint. Upon completion of final preparation, the body shall be painted utilizing the highest quality, state of the art, low V.O.C., polyurethane base paint. Finish paint shall be applied in multiple coats to ensure proper paint coverage with a high gloss finish.

The entire body shall be buffed and detailed.

Exception:
Yes_____ No:_____

Bidders Page# _____

23.4 BODY PAINT

The inside and underside areas of the complete body assembly shall be painted black using a PPG Delta System, prior to the installation of the body on the chassis or torque box.

Exception:
Yes_____ No:_____

Bidders Page# _____

23.5 COMPARTMENT FINISH

The interior of the aluminum body compartments shall have an unpainted "DA" finish inside. All seams shall be caulked with a clear silicone type caulking.

Exception:
Yes_____ No:_____

Bidders Page# _____

23.6 BODY PAINT

The body paint finish shall be PPG Delta System in a single color, to match customer furnished paint codes and requirements.

A paint sealant shall be applied to protect the paint and ease the need for vehicle washing to remove dirt and road grime.

Exception:
Yes_____ No:_____

Bidders Page# _____

23.7 PUMP / PIPING PAINT

The pump enclosure and pump/plumbing within the pump enclosure shall be painted black.

23.8 FENDER STORAGE COMPARTMENT PAINT

Exception:
Yes_____ No:_____

The interior of the fender storage compartments (if fender compartments are specified) shall be finish painted job color.

Bidders Page# _____

23.9 CAB PRIMER & PREPARATION

Exception:
Yes_____ No:_____

Bidders Page# _____

The cab primer shall be a two (2) stage process. First stage shall be a coating with a two part component, self-etching, and corrosion resistant primer to chemically bond the surface of the metal for increased adhesion. Second stage shall be multiple coats of a catalyzed, two component, polyurethane primer applied for leveling of small imperfections and top coat sealing.

23.10 CAB FINISH PAINT

Exception:
Yes_____ No:_____

Bidders Page# _____

The entire cab shall be finish sanded and prepared for final paint. Upon completion of final preparation, the cab shall be painted utilizing the highest quality, state of the art, low V.O.C., polyurethane base paint. Finish paint shall be applied in multiple coats to ensure proper paint coverage with a high gloss finish.

The cab exterior shall be painted with PPG Delta system to match purchaser's furnished paint codes. A two-tone paint finish shall be provided with the two-tone break line located approximately 3" below the cab side windows.

The entire exterior finish of the cab shall be buffed and detailed.

23.11 CAB INTERIOR PAINT

Exception:
Yes_____ No:_____

Bidders Page# _____

The interior metal surfaces of the cab shall be finish painted with a textured gray paint.

23.12 CHASSIS PAINT

Exception:
Yes_____ No:_____

Bidders Page# _____

The chassis frame rails, suspension and axles shall be painted with Polyurethane paint to match the body color code prior to the installation of any air lines or electrical system to ensure serviceability.

23.13 WHEEL PAINT

Exception:
Yes_____ No:_____

Bidders Page# _____

The chassis wheels, (except aluminum wheels) shall be painted job color with silver trim around the perimeter.

23.14 PAINT CODES

Exception:
Yes_____ No:_____

Bidders Page# _____

The paint shall match customer furnished paint code(s) and layout. The paint code(s) shall be as indicated below:

- **PRIMARY PAINT COLOR**

  Single Color: Red TBD Paint Code#90 TBD

- **SECONDARY PAINT COLOR**

  Two/Tone Color: White TBD Paint code#10 TBD

23.15 TOUCH-UP PAINT

Exception:
Yes_____ No:_____

Bidders Page# _____

One (1) (2) Two Oz. container with brush of each exterior color paint for touch-up purposes shall be supplied when the apparatus is delivered to the end user.

23.16 FINALIZATION & DETAILING

Exception:
Yes_____ No:_____

Bidders Page# _____

Prior to delivery the vehicle, the interior and exterior be cleaned and detailed. The finalization process detailing shall include installation of NFPA required labels, checking fluid levels, sealing and caulking required areas of the cab and body, rust proofing, paint touch-up, etc.

23.17 RUST PROOFING

Exception:
Yes_____ No:_____

Bidders Page# _____

The entire unit shall be thoroughly rust proofed utilizing rustproof and sound deadening materials applied in manufacturer recommended application procedures. Rust proofing shall be applied during the assembly process and upon completion to insure proper coverage in all critical areas.

24.0 ** LETTERING AND STRIPING ******

24.1 COMPUTER GENERATED LETTERING

Exception:
Yes_____ No:_____

Bidders Page# _____

The lettering and striping shall be custom designed utilizing state of the art computer software and computerized cutting machines. The manufacturer shall employ a full time artist / designer to generate all lettering, decals, and striping to meet the requirements of the Fire Department. The artwork for the lettering and striping shall be kept on record by the apparatus manufacturer to allow for ease in duplication for the Fire Department.

24.2 REAR CAB DOOR LETTERING

Exception:
Yes_____ No:_____

Bidders Page# _____

Lettering shall be provided on the cab crew doors per the fire department requirements. The design of the lettering on the cab doors shall be designed to fit in the 496 sq. inches available.

Lettering provided on the crew cab doors shall be 3" high.

24.3 FRONT OF CAB LETTERING

Exception:
Yes_____ No:_____

Bidders Page# _____

Scotch-Cal without drop shadow lettering shall be provided on the front of the cab per the fire department requirements. The design of the lettering on the front of the cab shall be designed to fit in the 167 sq. inches available.

Lettering provided on the front of cab shall be 3" high.

24.4 REAR BODY LETTERING

Exception:
Yes_____ No:_____

Bidders Page# _____

Scotch-Cal without drop shadow lettering shall be provided on the rear body panel per the fire department requirements. The design of the lettering on the rear of the body shall be designed to fit in the 167 sq. inches available.

Lettering provided on the rear body panel shall be 3" high.

24.5 BODY SIDE SHEET LETTERING

Exception:
Yes_____ No:_____

Bidders Page# _____

Scotch-Cal without drop shadow lettering shall be provided on the body side sheet per the fire department requirements. The design of the lettering on the body side sheet shall be designed to fit in the 2500 sq. inches available.

Lettering provided on the body side sheet shall be 12" high.

24.6 LETTERING FONT

Exception:
Yes_____ No:_____

Bidders Page# _____

The lettering shall be designed and cut with a basic block type font:

"BLOCK TYPE FONT"

24.7 DEPARTMENT SUPPLIED LOGO

Exception:
Yes_____ No:_____

Bidders Page# _____

The department supplied logo will be installed on the left and right front cab doors.

24.8 CUSTOM FIRE DEPARTMENT LOGO

Exception:
Yes_____ No:_____

Bidders Page# _____

A pair of custom fire department logos shall be computer generated and will be no larger than the 496 sq. inches available.

The Medic Star shall be printed on Scotch-Cal with two computer generated printed colors.

The custom logo shall be located as directed by the Fire Department.

24.9 REVERSE CUT LETTERING INTO REFLECTIVE STRIPE

Exception:
Yes_____ No:_____

Bidders Page# _____

"Dial 911" shall be reverse cut into the reflective stripe. "Dial" shall be vertical and "911" shall be horizontal within the stripe. This shall be located on the rear side compartment doors, each side.

25.0 ** NFPA REQUIRED SCOTCH-LITE STRIPING ****

25.1 SCOTCH-LITE STRIPE

Exception:
Yes_____ No:_____

Bidders Page# _____

A ten (10) inch high "Scotch-Lite" stripe shall be provided. The stripe shall be applied on a minimum of 60 percent of each side of the unit, 60 percent on the rear of the unit and 40 percent on the front of the unit. The Scotch-Lite stripe layout shall be determined by the Fire Department.

The Scotch-Lite shall be white in color.

25.2 PIN STRIPES

Exception:
Yes_____ No:_____

Bidders Page# _____

Two (2) 1/4" black vinyl pin stripes shall be incorporated into the Scotch-Lite scheme to border the primary Scotch-Lite stripe on the top and bottom edges. Final layout of this configuration shall be determined by the Fire Department.

25.3 STAY BACK SIGN

Exception:
Yes_____ No:_____

Bidders Page# _____

A reflective "Stay Back 500 Feet" sign with four (4) inch high letters shall be mounted on the rear of the vehicle as directed by the fire department.

25.4 REAR CHEVRON STRIPING

Exception:
Yes_____ No:_____

Bidders Page# _____

At least 50% of the rear facing vertical surface shall be covered with alternating strips of reflective striping.

The striping shall be 6" Scotch-Lite.

The Scotch-Lite shall be Ruby Red and Lemon Yellow in color.

25.5 STAINLESS STEEL NUMBER PLACARDS

Exception:
Yes_____ No:_____

Bidders Page# _____

A total of four (4) stainless steel number placards will be provided and mounted at the front, rear and sides of the vehicle. **The placards shall be painted Semi-Gloss Black.**

The number placards will be 12" high x 14" wide with drop in plates, appropriately numbered to Fire Department requirements. The numbers on the drop in plates will be gold reflective material.

26.0 *** WARRANTIES & REQUIRED INFORMATION *****

26.1 Fire Apparatus Manufacture WARRANTY, STARTING ON DELIVERY DATE

Exception:
Yes_____ No:_____

Warranty coverage by the manufacture will begin on the date the unit is placed into service by the purchaser.

Bidders Page# _____

26.2 WARRANTY - CHASSIS

Exception:
Yes_____ No:_____

Bidders Page# _____

The proposed vehicle includes a one (1) year new vehicle warranty, upon delivery and acceptance of the vehicle. The warranty will ensure that the vehicle has been manufactured to the proposed contract specifications and will be free from defects in material and workmanship that may appear under normal use and service within the warranty period. The warranty may be subject to different time and mileage limitations for specific components and parts. This warranty is issued to the original purchaser of the vehicle.

The warranty will not apply to tires, batteries, or other parts or components that are warranted directly by their manufacturers. The warranty will not apply to routine maintenance requirements as described in the service and operators manual. No warranty whether express, implied, statutory or otherwise including, but not limited to any warranty of merchantability or fitness for purpose will be imposed.

26.3 OVERALL UNIT AND CUSTOM CHASSIS

Exception:
Yes_____ No:_____

Bidders Page# _____

All components and parts of the vehicle are warranted for a period of one (1) year from acceptance of the vehicle, unless excluded elsewhere in this warranty or described as having longer time limitations.

26.4 WARRANTY - ENGINE

Exception:
Yes_____ No:_____

Bidders Page# _____

The proposed unit will be equipped with a Fire Service rated engine, which will come furnished with a five (5) year Engine Manufacturer's warranty. A copy of the manufacturer's warranty will be supplied to define additional details of the warranty provisions.

26.5 WARRANTY - TRANSMISSION

Exception:
Yes_____ No:_____

Bidders Page# _____

The proposed Allison transmission will be provided with a five (5) year warranty. A copy of the Allison transmission warranty will be supplied to the purchaser to define additional details of the warranty provisions.

26.6 TRANSMISSION COOLER WARRANTY

Exception:
Yes_____ No:_____

Bidders Page# _____

The transmission cooler shall have a five (5) year warranty. The warranty shall also cover any collateral damage caused by failure of the cooler system.

26.7 WARRANTY - COOLING SYSTEM - CUSTOM CHASSIS

Exception:
Yes_____ No:_____

Bidders Page# _____

The Fire Apparatus Manufacture shall warrants all Cooling System Equipment components used in the construction of Fire Apparatus manufacture against defects and workmanship provided the apparatus is used in a normal and reasonable manner. This warranty is extended only to the original user-purchaser for a period of **FIVE (5)** years from the date of delivery / acceptance to the original user-purchaser, whichever occurs first.

This warranty applies to both purchased and fabricated, manufacturer supplied, coolant system components, and is not provided in lieu of any Vendor provided warranties. All coolant system components provided by the engine manufacturer are covered by the engine manufacturer's warranty only.

26.8 WARRANTY - CUSTOM CHASSIS FRAME RAILS

Exception:
Yes_____ No:_____

Bidders Page# _____

The proposed manufactures custom chassis frame and cross members will be warranted for an unlimited time period. A copy of manufacture's frame rail warranty will be supplied to define additional details of the warranty provisions.

26.9 WARRANTY - STEERING UNIT

Exception:
Yes_____ No:_____

Bidders Page# _____

The proposed Sheppard steering gear will be warranted for a period of three (3) years from the first date of service or 150,000 miles (241,401 kilometers), whichever occurs first. The product will be free from defects in material and workmanship under normal use in applications approved in advance by Sheppard.

26.10 WARRANTY - REAR AXLE

Exception:
Yes_____ No:_____

Bidders Page# _____

The Meritor axle/s will be provided with a five (5) year warranty. The first two (2) years will be parts and labor; the remaining three (3) years will be parts only. Wheel seals, gaskets and wheel bearings will be covered for one year. A copy of Meritor's warranty will be supplied to define additional details of the warranty provisions. Vehicles that operate full or part time outside the United States and Canada will have a one (1) year, parts only warranty.

26.11 WARRANTY - ABS

Exception:
Yes_____ No:_____

Bidders Page# _____

The Meritor ABS will be provided with a three (3) year warranty, parts and labor. A copy of Meritor's warranty will be supplied to define additional details of the warranty provisions. Vehicles that operate full or part time outside the United States and Canada will have a one (1) year, parts only warranty.

26.12 WARRANTY - CAB STRUCTURE

Exception:
Yes_____ No:_____

Bidders Page# _____

The proposed cab will be warranted against structural defects for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

26.13 WARRANTY - BODY STRUCTURE

Exception:
Yes_____ No:_____

Bidders Page# _____

The proposed body will be warranted against structural defects for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

26.14 WARRANTY - CORROSION

Exception:
Yes_____ No:_____

Bidders Page# _____

The proposed cab and body will be warranted against rust-through or perforation, due to corrosion from within, for a period of ten (10) years. Perforation is defined as a condition in which an actual hole occurs in a sheet metal panel due to rust or corrosion from within. Surface rust or corrosion caused by chips or scratches in the paint is not covered by this warranty.

26.15 WARRANTY - PAINT

Exception:
Yes_____ No:_____

Bidders Page# _____

The proposed paint finish will be warranted for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

26.16 WARRANTY - STAINLESS STEEL PLUMBING WARRANTY

Exception:
Yes_____ No:_____

Bidders Page# _____

The proposed stainless steel plumbing will be warranted for a period of ten (10) years from the date of acceptance of the unit. Details of warranty coverage, limitations and exclusions are included in the specific warranty document.

26.17 WARRANTY - FRONT SUSPENSION

Exception:
Yes_____ No:_____

Bidders Page# _____

ReycoGranning™ (The Company) warrants suspension products manufactured by it to be free from defects in material and workmanship which occur under normal use and service for a period of three (3) years or 150,000 miles, whichever comes first.

This warranty will not apply and no warranty of any kind shall exist as to any product which has been subject to abuse, misuse, neglect, misapplication or accident of any type or cause or which has been repaired, replaced, substituted or used with parts other than genuine parts of The Company or altered by anyone.

26.18 WARRANTY - REAR SUSPENSION

Exception:
Yes_____ No:_____

Bidders Page# _____

Hendrickson warrants suspension products manufactured by it to be free from defects in material and workmanship which occur under normal use and service for a period of three (3) years (base year + 2 years).

This warranty will not apply and no warranty of any kind will exist as to any product which has been subject to abuse, misuse, neglect, misapplication or accident of any type or cause or which has been repaired, replaced, substituted or used with parts other than genuine Hendrickson parts or altered by anyone.

26.19 WARRANTY - WATER TANK

Exception:
Yes_____ No:_____

Bidders Page# _____

The proposed water tank will be warranted by the water tank manufacturer for the "Lifetime" of the unit. A copy of the manufacturer's warranty will be supplied to define additional details of the warranty provisions.

26.20 WARRANTY - FIRE PUMP

Exception:
Yes_____ No:_____

Bidders Page# _____

Waterous warrants, to the original Buyer only, that products manufactured by Waterous will be free from defects in material and workmanship under normal use and service for a period of five (5) years from the date the product is first placed in service or five and one-half (5 1/2) years from the date of shipment by Waterous, whichever period will be the first to expire; provided the buyer notifies Waterous, in writing, of the defect in said product within the warranty period, and said product is found by Waterous to be nonconforming with the aforesaid warranty.

26.21 WARRANTY - FOAM SYSTEM

Exception:
Yes_____ No:_____

Bidders Page# _____

The liability of FoamPro under the foregoing warranty will be limited to the repair or replacement at FoamPro's™ option without charge for labor or materials of any parts upon return of the entire pump, system or other product or of the particular part to the FoamPro factory within the warranty period, at the sole expense of the purchaser, which part will upon examination appear to FoamPro's™ satisfaction to have been defective in material and workmanship.

26.22 WARRANTY - HEAVY DUTY VALVES

Exception:
Yes_____ No:_____

Bidders Page# _____

Akron Brass warrants Heavy Duty Swing-Out Valves for a period of ten (10) years after purchase against defects in material or workmanship. Akron Brass will repair or replace any Heavy Duty Swing Out Valve which fails to satisfy this warranty.

26.23 WARRANTY - SEATING

Exception:
Yes_____ No:_____

Bidders Page# _____

HO Bostrom will warrant each new seat manufactured, to be free from defects in materials and workmanship when delivered to the original purchaser for a period of five (5) years.

Labor to remove or reinstall and transportation of defective items will not be covered by, or any allowance made for said cost under this warranty.

26.24 WARRANTY – Electric Windows

Exception:
Yes_____ No:_____

Bidders Page# _____

The electric window regulator and motors shall carry a five year warranty to be free from defects in material and workmanship.

27.0 NFPA REQUIRED LOOSE EQUIPMENT, PROVIDED BY FIRE DEPARTMENT

Exception:
Yes_____ No:_____

Bidders Page# _____

The following loose equipment as outlined in NFPA 1901, 2009 edition in accordance with the applicable requirements unless supplied by the manufacturer or sales rep organization, will be provided by the fire department. All loose equipment will be installed on the apparatus before placed in emergency service, unless the fire department waives NFPA section 4.21.

Below Numbering Sequences are in Reference to NFPA 1901:

Section 5.7 Equipment.

It is the responsibility of the purchaser to ensure that all required equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

5.7.1 Ground Ladders.

5.7.1.1 All fire department ground ladders carried on the apparatus shall meet the requirements of NFPA 1931, Standard for Manufacturer's Design of Fire Department Ground Ladders, except as permitted by 5.7.1.3 and 5.7.1.4.

5.7.1.2 At a minimum, the following fire department ground ladders shall be carried on the apparatus:

(1) One straight ladder equipped with roof hooks
(2) One extension ladder
(3) One folding ladder

5.7.1.3 Stepladders and other types of multipurpose ladders meeting ANSI AI4.2, Ladders - Portable Metal- Safety Requirements, or ANSI A14.5, Ladders - Portable Reinforced Plastic Safely Requirements, with duty ratings of Type IA or lAA shall be permitted to be substituted for the folding ladder required in 5.7.1.2(3).

5.7.1.4 Stepladders and other types of multipurpose ladders shall be permitted to be carried in addition to the minimum fire department ground ladders specified in 5.7.1.2 provided they meet either ANSI AI4.2 or ANSI A14.5 with duty ratings of Type 1A or 1AA.

Section 5.7.2 Suction Hose or Supply Hose.

It is the responsibility of the purchaser to ensure that all required equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

5.7.2.1 A minimum of 20 ft (6 m) of suction hose or 15 ft (4.5 m) of supply hose shall be carried.

5.7.2.1.1 Where suction hose is provided, a suction strainer shall be furnished.

5.7.2.1.2 Where suction hose is provided, the friction and entrance loss of the combination suction hose and strainer shall not exceed the losses listed in Table 16.2.4.1 (b) or Table 16.2.4.1(c).

5.7.2.1.3 Where supply hose is provided. It shall have couplings compatible with the local hydrant outlet connection on one end and the pump intake connection on the other end.

5.7.2.2 Suction hose and supply hose shall meet the requirements of NFPA 1961, Standard on Fire Hose.

Section 5.8 Minor Equipment.

It is the responsibility of the purchaser to ensure that all required equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

5.8.2 Fire Hose and Nozzles. The following fire hose and nozzles shall be carried on the apparatus:

(1) 800 ft. (240 m) of 2 1/2 in. (65 mm) or larger fire hose
(2) 400 ft. (120 m) of 1 1/2 in. (38 mm), 1 3/4 in. (45 mm), or 2 in. (52 mm) fire hose
(3) One handline nozzle. 200 gpm (750 L/min) minimum
(4) Two handline nozzles. 95 gpm (360 L/min) minimum
(5) One playpipe with shutoff and 1 in. (25 mm), 1 1/8 in. (29 mm), and l 1/4 in. (32 mm) tips

5.8.3 Miscellaneous Equipment. The following additional equipment shall be carried on the apparatus:

(1) One 6 lb. (2.7 kg) flathead axe mounted in a bracket fastened to the apparatus
(2) One 6 lb. (2.7 kg) pickhead axe mounted in a bracket fastened to the apparatus
(3) One 6 ft. (2 m) pike pole or plaster hook mounted in a bracket fastened to the apparatus
(4) One 8 ft. (2.4 m) or longer pike pole mounted in a bracket fastened to the apparatus
(5) Two portable hand lights mounted in brackets fastened to the apparatus
(6) One approved dry chemical portable fire extinguisher with a minimum 80-B:C rating mounted in a bracket fastened to the apparatus
(7) One 2 1/2 gal (9.5 L) or larger water extinguisher mounted in a bracket fastened to the apparatus
(8) One self-contained breathing apparatus (SCBA) complying with NFPA 1981, Standard on Open-Circuit Self Contained Breathing Apparatus (SCBA) for Emergency Services, for each assigned sealing position. But not fewer than four, mounted in brackets fastened to the apparatus or stored in containers supplied by the SCBA manufacturer
(9) One spare SCBA cylinder for each SCBA carried, each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space
(10) One first aid kit
(11) Four combination spanner wrenches mounted in brackets fastened to the apparatus
(12) Two hydrant wrenches mounted in brackets fastened to the apparatus
(13) One double female 2 1/2 in. (65 mm) adapter with National Hose (NH) threads, mounted in a bracket fastened to the apparatus
(14) One double male 2 1/2 in. (65 mm) adapter with NH threads, mounted in a bracket fastened to the apparatus

(15) One rubber mallet, suitable for use on suction hose connections, mounted in a bracket fastened to the apparatus
(16) Two salvage covers each a minimum size of 12 ft. x 14 ft. (3.7 m x 4.3 m)
(17) Two or more wheel chocks. Mounted in readily accessible locations, that together will hold the apparatus. When loaded to its GVWR or GCWR, on a hard surface with a 20 percent grade with the transmission in neutral and the parking brake released
(18) One traffic vest for each seating position, each vest to comply with ANSI/ISEA 207, Standard for High-Visibility Public Safety Vests, and have a five-point breakaway feature that includes two at the shoulders, two at the sides, and one at the front
(19) Five fluorescent. orange traffic cones not less than 28 in. (711 mm) in height, each equipped with a 6 in. (152 mm) retroflective white band no more than 4 in. (102 111m) from the top of the cone, and an additional 4 in. (102 mm) retroflective white band 2 in. (51 mm) below the 6 in. (152 mm) hand
(20) Five illuminated warning devices such as highway flares, unless the live fluorescent orange traffic cones have illuminating capabilities
(21) One automatic external defibrillator (AED)

5.8.3.1 If the supply hose carried does not use sexless couplings, an additional double female adapter and double male adapter, sized to fit the supply hose carried, shall be carried mounted in brackets fastened to the apparatus.

5.8.3.2 If none of the Pump intakes are valved, a hose appliance that is equipped with one or more gated intakes with female swivel connection(s) compatible with the supply hose used on one side and a swivel connection with pump intake threads on the other side shall be carried. Any intake connection larger than 3 in. (75 mm) shall include a pressure relief device that meets the requirements of 16.6.6.

5.8.3.3 If the pumper is equipped with an aerial device with a permanently mounted ladder, four ladder belts meeting the requirements of NFPA 1983, Standard on Life Safety Rope and Equipment for Emergency Services shall be provided.

5.8.3.4 If the apparatus does not have a 2 1/2 in. intake with NH threads, an adapter from 2 1/2 in. NH female to a pump intake shall be carried, mounted in a bracket fastened to the apparatus if not already mounted directly to the intake.

5.8.3.5 If the supply hose carried has other than 2 1/2 in. NH threads, adapters shall be carried to allow feeding the supply hose from a 2 1/2 in. NH thread male discharge and to allow the hose to connect to a 2 1/2 in. NH female intake, mounted in brackets fastened to the apparatus if not already mounted directly to the discharge or intake.

14.1.8.4 Fire Helmet.

It is the responsibility of the purchaser to ensure that "Fire helmets shall not be worn by persons riding in enclosed driving and crew areas any time the apparatus in placed in service.

14.1.8.4.1 A location for helmet storage shall be provided.

14.1.8.4.2 If helmets are to be stored in the driving or crew compartment, the helmets shall be secured in compliance with 14.1.11.2.

14.1.10 SCBA Mounting.

It is the responsibility of the purchaser to ensure that any SCBA equipment has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

14.1.10.1 Where SCBA units are mounted within a driving or crew compartment, a positive latching mechanical means of holding the SCBA device in its stowed position shall he provided such that the SCBA unit cannot be retained in the mount unless the positive latch is engaged.

14.1.10.2 The bracket holding device and its mounting shall retain the SCBA unit when subjected to a 9 G force and shall be installed in accordance with the bracket manufacturer's requirements.

14.1.10.3 If the SCBA unit is mounted in a seatback, the release mechanism shall be accessible to the user while seated.

14.1.11 Equipment Mounting.

It is the responsibility of the purchaser to ensure that any equipment installed on the apparatus by them or their subcontractor meets the following requirements prior to placing it in service.

14.1.11.1 All equipment required to be used during an emergency response shall be securely fastened.

14.1.11.2 All equipment not required to be used during an emergency response, with the exception of SCBA units, shall not be mounted in a driving or crew area unless it is contained in a fully enclosed and latched compartment capable of containing the contents when a 9 G force is applied in the longitudinal axis of the vehicle or a 9G force is applied in any other direction, or the equipment is mounted in a bracket(s) that can contain the equipment when the equipment is subjected to those same forces.

Section 15.9.3 Reflective Striping.

It is the responsibility of the purchaser to ensure that Reflective Striping has been supplied and installed on the apparatus in order to achieve compliance with the standard prior to placing it in service.

15.9.3.1'" A retroreflective stripe(s) shall be affixed to at least 50 percent of the cab and body length on each side, excluding the pump panel areas, and at least 25 percent of the width of the front of the apparatus.

15.9.3.1.1 The stripe or combination of stripes shall be a minimum of 4 in. (100 mm) in total width.

15.9.3.1.2 The 4 in. (100 mm) wide stripe or combination of stripes shall be permitted to be interrupted by objects (i.e., receptacles, cracks between slats in roll up doors) provided the full stripe is seen as conspicuous when approaching the apparatus.

15.10 Hose Storage.

It is the responsibility of the purchaser to ensure that any hose storage area includes a positive means to prevent unintentional deployment in order to achieve compliance with the standard prior to placing it in service.

15.10.7 Any hose storage area shall be equipped with a positive means to prevent unintentional deployment of the hose from the top, sides, front, and rear of the hose storage area while the apparatus is underway in normal operations.